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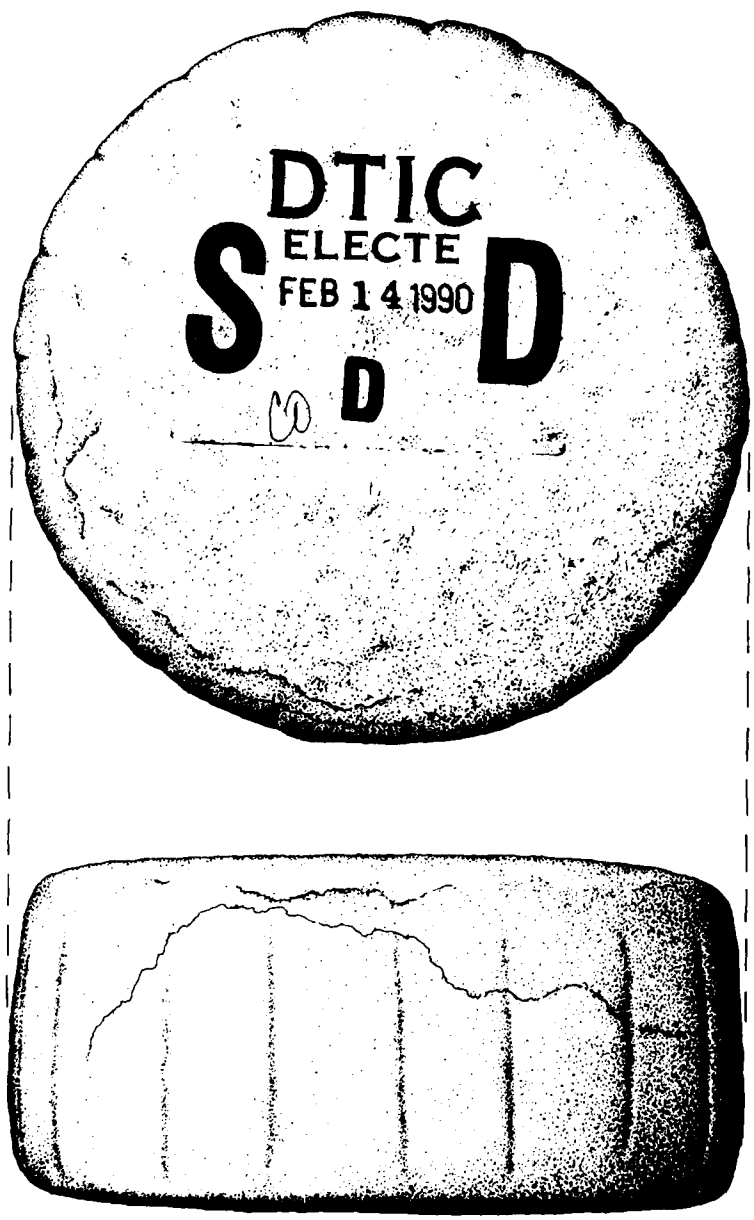
INVENTORY AND EVALUATION OF CULTURAL RESOURCES, BOLSA CHICA MESA AND HUNTINGTON BEACH MESA, ORANGE COUNTY, CALIFORNIA



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INVENTORY AND EVALUATION
OF
CULTURAL RESOURCES,
BOLSA CHICA MESA AND HUNTINGTON BEACH MESA,
ORANGE COUNTY, CALIFORNIA

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Prepared for
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P.O. Box 2711
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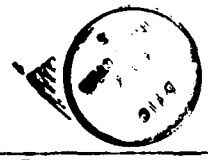
In partial fulfillment of Contract No. DACW09-88-D-0007
Archaeological-Cultural Resources Services for
Civil Works Projects in Southern California
Delivery Order No. 8



30 September 1989

ABSTRACT

This report describes a cultural resources study of the Bolsa Chica area of coastal northern Orange County, California, conducted by INFOTEC Research, Inc. (IRI) for the Los Angeles District, U.S. Army Corps of Engineers (CoE). IRI's work was designed to evaluate current knowledge regarding archaeological and other cultural sites that may be affected by proposed developments. The report also includes assessments of National Register of Historic Places (NRHP) eligibility of some sites and recommendations for completion of NRHP-eligibility evaluation of other sites. A program of background research and field inspection of known archaeological resources was conducted. IRI redocumented 12 sites (previously designated as 15 separate loci), and found that two additional sites formerly known in the area have been destroyed. Of the 12 redocumented sites, all have one or more prehistoric components and three also contain historic non-Indian components. Except for World War II coastal defense fortifications on Bolsa Chica Mesa (which will soon meet the NRHP age criterion), all potentially NRHP-eligible cultural resources with surface manifestations in the project area probably have been identified. Three of the cultural sites appear to be NRHP-eligible, three are considered ineligible, and additional data will be needed to evaluate the remaining sites. Specific recommendations are given for further assessment of those sites. As well, additional testing may be required to permit planning for the management of significant cultural properties that may be affected by future development.

ACKNOWLEDGEMENTS

This study was accomplished through the cooperation and assistance of many agencies and individuals, to whom we extend our sincere thanks. Marie Cottrell, Ron Gansfried, John Murray, and Steven Schwartz of the Los Angeles District, Corps of Engineers, facilitated our work by providing advice, data, and technical reports; John and Steve, who served as the Corps' representatives to INFOTEC for the current project, were particularly helpful in this regard. Signal Landmark, Inc., Chevron USA, Inc., the Huntington Beach Company, and the Metropolitan Water District of Southern California kindly permitted access to their lands within the project area and supplied various documents relevant to our study.

Valuable information and reports also were provided by: Amigos de Bolsa Chica; Jeanne Arnold, Archaeological Survey, University of California, Los Angeles; Eloise Barter, California Department of Parks and Recreation, Sacramento; California Office of Historic Preservation, Sacramento; Constance Cameron, California State University, Fullerton; Keith Dixon and Franklin Fenenga, California State University, Long Beach; the Environmental Management Agency of Orange County, Santa Ana; William O. Hendricks, Sherman Foundation Library; Reed Holderman, California Coastal Commission; Susan Hori, with the law firm of Jones, Day, Reavis, and Pogue, Irvine; Lavinia Knight and Laurie Mitchell, Pacific Coast Archaeological Society, Costa Mesa; Henry Koerper, Cypress College and Christ College; Miles Larson, Newport Beach; Mel Malkoff, Malkoff & Associates, Irvine; the Museum of Anthropology, California State University, Fullerton; Orange County Historical Society; Rockwell International, Seal Beach; Scientific Resource Surveys, Inc., Huntington Beach; Robert R. Selway, III, Orange County Historical and Cultural Programs, Santa Ana; John J. Slonaker, U.S. Military History Institute, Carlisle Barracks, Carlisle, Pennsylvania; Russell Twomey, Metropolitan Water District of Southern California, Los Angeles; William Wallace, Southwest Museum, Los Angeles; and James Woodward, California Department of Parks and Recreation, Sacramento.

Information regarding issues of possible concern to local Native Americans, and names of Native Americans to be contacted in Orange County, were graciously provided by William Johnson and Larry Myers of the Native American Heritage Commission and by Dwight Dutschke, Native American Coordinator for the State Office of Historic Preservation. Native Americans who kindly responded to INFOTEC's subsequent inquiries include Beatrice Alva, the Juaneño Band of Mission Indians, Jim Velasquez, and the Intertribal Council of Tongva.

Roberta S. Greenwood, President of Greenwood and Associates, is thanked for coordinating the historical background study. Production of this report owes much to the efforts of Terry Brejla, who typed, printed, and copied several drafts. To all of these contributors, and any others who may have been overlooked, we offer our sincere gratitude. As always, we claim any errors and shortcomings as our own.

SKG, PL, MJM, JS, TVB
Sonora, California

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INTRODUCTION

Michael J. Moratto and Thad M. Van Bueren

Reported here is a study of cultural resources in the Bolsa Chica Mesa-Huntington Beach Mesa area of coastal northern Orange County, California. The study, performed by INFOTEC Research, Inc. (IRI) on behalf of the Los Angeles District, U.S. Army Corps of Engineers (CoE), was designed to assess the status of knowledge regarding archaeological sites that may be affected by proposed developments. The scope, purpose, and methods of investigation are summarized in the following sections. Subsequent chapters describe the project's environmental setting (Chapter 2), historic and ethnographic background (Chapter 3), previous archaeological work (Chapter 4), and methods and results of IRI's field work (Chapter 5). Chapter 6 provides summary descriptions and National Register of Historic Places (NRHP) evaluations of cultural resources. Recommendations and conclusions are presented in Chapter 7. A data compendium--including archaeological site records, survey and site-location maps, photographs, and copies of reports on archaeological sites in the project area--has been submitted separately to the CoE.

Scope and Purpose of Study

The Scope-of-Work for this study (CoE 1988) calls for the performance of nine tasks. Briefly, these include: consultation with Native Americans, historians, archaeologists and others knowledgeable about cultural resources in the project area; literature and records searches; preparation of overviews of local prehistory, ethnohistory, and history; field inspection and re-recording of known archaeological sites; preliminary evaluation of NRHP eligibility; preparation of a detailed map showing past archaeological survey coverages and site locations; photography of historic structures; compilation of a data compendium; and preparation of draft and final technical reports.

Two key questions addressed in this study are: (1) Is further archaeological survey required to discover any potentially significant cultural resources that might have been overlooked in previous fieldwork; and (2) what kinds of investigations are needed to permit NRHP evaluation of sites for which available data are inadequate. Since archaeological survey methods have been refined in recent years, IRI examined the operating assumptions and procedures of previous fieldworkers. We wished to learn, for instance, whether historic resources were recorded. We also reviewed the intensity of past survey coverage in various parts of the project area. To assess the adequacy of previous investigations, IRI first developed a context for evaluation, taking into account both regional and local research issues, then examined the records of all known cultural resources in the study area.

Study Methods

To accomplish the tasks set forth above, several study methods were employed. These included archival research, oral interviews, both written and telephone contacts, and reinspection of known sites. Only background research methods are described here; field procedures are detailed in Chapter 5. At the inception of this study, IRI prepared a list of individuals and agencies to be consulted. Additional names were added to the list subsequently as new leads came to light. This task was performed concurrently by three persons in order to expedite the study's progress.

Telephone and/or direct contacts were made with: Jim Woodward (California Department of Parks and Recreation, Sacramento); Franklin Fenenga (Professor Emeritus, California State University, Long Beach); Dr. Keith Dixon (Professor, California State University, Long Beach); Dr. Jeanne Arnold (Director, Archaeological Survey, University of California, Los Angeles); Scientific Resource Surveys, Inc., Huntington Beach; Eloise Barter (California Department of Parks and Recreation, Sacramento); Constance Cameron (California State University, Fullerton); Dr. Henry Koerper (Cypress College and Christ College); Robert R. Selway, III (Chief of Orange County's Historical and Cultural Programs, Santa Ana); Russell Twomey (Metropolitan Water District of Southern California, Los Angeles); Susan Hori (attorney, Jones, Day, Reavis, and Pogue, Irvine); Darlene Shelly (Signal Landmark, Inc., Irvine); John Murray and Marie Cottrell, CoE; Dr. William Wallace (archaeologist, Southwest Museum, Los Angeles); and Lavinia Knight and Laurie Mitchell (Pacific Coast Archaeological Society, Costa Mesa). The main purpose of these contacts was to obtain information and reports pertinent to the study locality.

The views of traditional Indian people were obtained through various contacts. On August 10, 1988 INFOTEC wrote to the California Native American Heritage Commission requesting names of Indians who might be interested in cultural resources of the project locality. A similar request was made in a March 1, 1989 meeting with Dwight Dutschke, Native American Coordinator for the State Office of Historic Preservation in Sacramento. On March 13, 1989 INFOTEC wrote to all of the Indian groups and individuals suggested by Mr. Dutschke and the Native American Heritage Commission. Our letter invited expressions of knowledge or concerns about places or remains of interest in the project area. One telephone reply and three letters were received in response to the March 13th inquiry. These responses, along with copies of INFOTEC's correspondence, are presented in Appendix A.

Archaeological site records, maps of surveyed areas, and copies of reports were obtained during visits to: the UCLA Archaeological Survey, Los Angeles; Environmental Planning Section, CoE; and the Environmental Management Agency of Orange County, Santa Ana. Other archives and libraries visited during background research include those of the California Office of Historic Preservation in Sacramento; the Pacific Coast Archaeological Society in Costa Mesa; Signal Landmark, Inc. in Irvine; Scientific Resource Surveys, Inc. in Huntington Beach; the

Museum of Anthropology at California State University, Fullerton; and Rockwell International in Seal Beach.

The project historian visited the administrative offices of Orange County in Santa Ana to examine historical maps, deeds, and other records, and searched for relevant historical data at a variety of local libraries, in special collections, and through contact with additional knowledgeable individuals. Among those contacted were: Amigos de Bolsa Chica; William O Hendricks (Sherman Foundation Library); Reed Holderman (California Coastal Commission); Miles Larson (historian of Newport Beach); Mel Malkoff (Malkoff & Associates, Irvine); Orange County Historical Society; Signal Landmark, Inc.; and John J. Slonaker, U.S. Military History Institute, Carlisle Barracks, Pennsylvania.

Cumulatively, this data gathering provided the background information needed (1) to evaluate known cultural resources in the project area, and (2) to assess the strengths and weaknesses of existing archaeological knowledge. The results of this background research and subsequent field investigations are described in the following chapters. As well, additional studies are recommended to complete the identification and NRHP evaluation of cultural resources within the project area.

2:

ENVIRONMENTAL SETTING

Thad M. Van Bueren with Michael J. Moratto

Project Location

The study area encompasses parts of Bolsa Chica and Huntington Beach mesas and the intervening Bolsa Gap (Bolsa Chica lowlands), situated along the seaward edge of the Los Angeles Basin between Seal Beach and Huntington Beach (Figure 2.1). The 1735-acre area includes portions of Sections 28, 29, 30, 32, 33, and 34 in Township 5S, Range 11W, and Sections 3 and 4 in Township 6S, Range 11W, as represented on the USGS Seal Beach, Calif. 7.5' quadrangle (1965; photorevised 1981). Elevations vary from below mean sea level in the lowland area to 38.7 m (127 ft) on Huntington Beach Mesa. With the exception of exotic trees, vegetation consists predominantly of low-lying plants that permit a sweeping view in all directions from the mesas (Figure 2.2). Before the days of air pollution, Santa Catalina Island, some 40 km (25 mi) to the southwest, was clearly visible from these elevated vantage points.

While surrounding lands are covered by urban development, the project area retains an open appearance despite various historic land uses, notably oil extraction and refining. Most of the project area is owned by the Signal Bolsa Corporation, with other parcels owned by D. E. Goodell, W. R. Grace, the Ocean View School District, Metropolitan Water District of Southern California, Orange County Flood Control District, City of Huntington Beach, Huntington Beach Company, and the State of California. The western margin of the project area borders Bolsa Chica State Beach and the Pacific Ocean (Figure 5.1).

Physical Environment

To understand the nature of changing physical conditions in the project vicinity, it is useful to consider first their geological origins. By the Middle Pleistocene (ca. 400,000 years ago), the Los Angeles Basin had been transformed from an extensive, shallow embayment into a coastal plain through the deposition of alluvium from eroding uplands (Stein et al. 1971; Woodford et al. 1954). Due to Continental glacial retreat and the attendant rise in sea level, this coastal plain (the Downey Plain) was subsequently inundated (ca. 340,000 to 60,000 years ago), and then reexposed by receding ocean levels and tectonic uplift over the next 50 millennia (California Division of Mines and Geology 1974).

The Downey Plain was dissected by the ancestral Los Angeles, San Gabriel, and Santa Ana rivers which meandered and sometimes coalesced to cut six major gaps in the seaward margin of the plain (Frey et al. 1970). Throughout the Holocene epoch (10,000 B.P.-present) the Santa Ana River migrated widely among the Santa Ana, Bolsa, Sunset, and

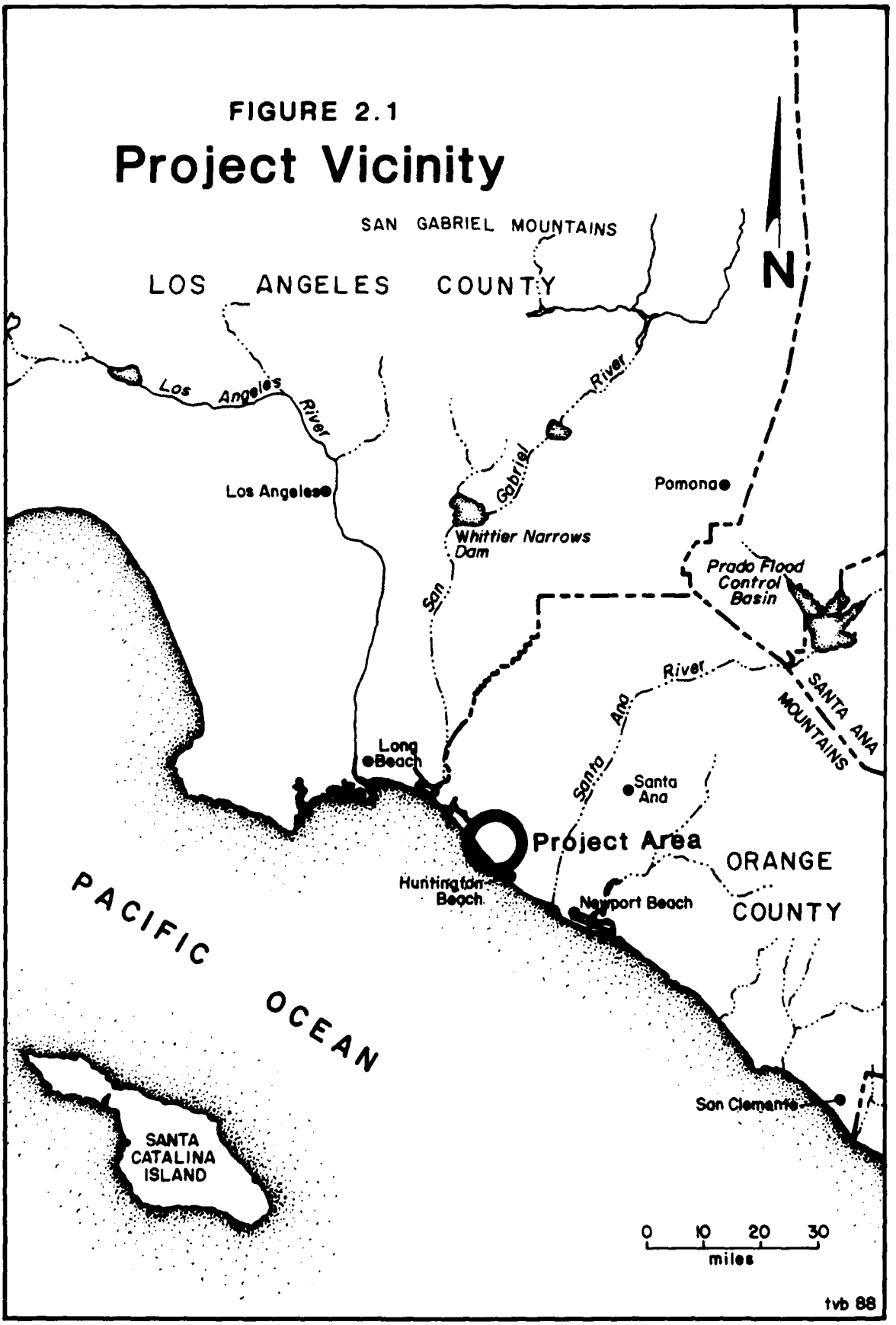
FIGURE 2.1
Project Vicinity
SAN GABRIEL MOUNTAINS
LOS ANGELES COUNTY
N
Los Angeles River
Los Angeles
San Gabriel River
Whittier Narrows Dam
Pomona
Prado Flood Control Basin
Santa Ana River
SANTA ANA MOUNTAINS
Long Beach
Santa Ana
Project Area
ORANGE COUNTY
Huntington Beach
Newport Beach
PACIFIC OCEAN
San Clemente
SANTA CATALINA ISLAND
0 10 20 30
miles
tvb 88

Figure 2.2. Panoramic view of the project area from its southeast corner atop Huntington Beach Mesa, facing northwest. (Photograph by T. Van Bueren.)

Alamitos gaps from Newport Bay on the south to the Long Beach vicinity on the north (Eckman et al. 1916), probably strongly influencing human land-use patterns.

Sea levels rose again as Pleistocene glaciers receded, beginning ca. 14,000 years ago. Given the depth of alluvial deposits which subsequently accumulated in the Bolsa Gap, and known rates of sea level increase (Curray 1960; Fairbridge 1960), initial flooding of the gap by the sea would have occurred approximately 8000 years ago. By that time the Bolsa Chica and Huntington Beach mesas had been uplifted by anticlinal folding and offset into two benches by tectonic activity along the Newport-Inglewood Fault, which bisects the project area from northwest to southeast (Morton and Miller 1973; Poland et al. 1956). Each mesa presently consists of a lower seaward bench and a higher landward bench featuring relatively minimal surface relief. The Bolsa Chica Mesa reaches a maximum elevation of 19.8 m (65 ft), while the Huntington Beach Mesa achieves a height of 38.7 m (127 ft) above the current (1929) mean sea level. Both mesas fall abruptly toward the Bolsa Chica lowlands and Pacific Ocean, while gradually descending in other directions.

As sea levels stabilized, sandy beaches developed along the coast and tidal action deposited sand spits across the mouths of Bolsa Bay and other inundated fluvial gaps (Harrowby 1973). Over time, Bolsa Bay gradually changed from a sheltered coastal feature to a bar-built lagoon as alluvium was trapped behind the protective sandy barrier. The

nature of the substrate which accumulated in Bolsa Bay strongly influenced the changing types and distributions of intertidal plants and animals over time as it was transformed from rocky to sandy and then muddy bottom. This alluvium presently exceeds 30.5 m (100 ft) in thickness throughout most of the lowland area, and consists of saturated silts and sandy silts with some gravel (Harrowby 1973; Eckman et al. 1916). By contrast, soils on the elevated mesas are clays and loams with some water-worn gravel and pebbles crossbedded over weakly consolidated sandstone, conglomerate, and shale.

Rocks, important as raw material for many articles made and used by local Indians, occur naturally in the project area only as pebbles (Wills 1986). Thus, larger stone artifacts either had to be imported to the area as finished products, or lithic raw materials or preforms had to be procured from the mountainous interior. In the project area pebbles of various sedimentary, metamorphic, and igneous rocks (derived originally from inland sources) occur naturally. Obsidian, indicating long-distance travel, is very rare in southern California's coastal archaeological sites (see Chapter 6), while most other artifactual stone documented in the area could have been quarried within 16-32 km (10-20 mi).

Due to the underlying geological structure of the area, an enormous groundwater basin has been formed on the landward side of the Newport-Inglewood Fault, resulting in a very high water table and, formerly, many perennial artesian springs (Harrowby 1973). The hydrography of the lowland area likely changed periodically in response to the meanderings of the Santa Ana River, which sometimes discharged through the Bolsa Gap (Mendenhall 1955). Small intermittent streams also drained the lowland area. Variations in the proportion of fresh water entering the lagoon and the nature of the sediments deposited there would have caused concomitant changes in the zonation of its biotic communities. During the historic period the hydrography of the project area was altered radically, as discussed below.

The present climate of the South Coast is Mediterranean, with moist, mild winters and warm, dry summers (Kesseli 1942). This pattern occurs within larger multiyear sequences of wet and dry years (Goodridge 1980:9). Local and micro climates are affected by proximity to the ocean which buffers seasonal temperature extremes and causes fog during the summer months. Differences in slope, exposure, prevailing winds, cold air drainage, and other factors create localized climates within the project area. Precipitation, falling entirely as rain, averages 33 cm (13 in) per year (Kahrl 1979). Mean temperatures range from 44° F in January to 79° F in July (Beck and Haase 1974).

Past environmental regimes have not always been like those of today. The Holocene epoch witnessed global climatic, geophysical, and biotic changes: warming temperatures, recession of glaciers, rising sea levels, wholesale replacement of regional vegetation types, and the extinction of Ice Age faunas. Consonant with these world-wide adjustments, the area of the western United States experienced sweeping paleoclimatic changes, notably episodic temperature shifts and fluctuations in the quantity and seasonal distribution of precipitation (Brubaker and

Cook 1983; Fritts and Gordon 1982; La Marche 1978; Moratto and Davis 1988). In turn, these changes affected vegetation communities, faunal resources, and surface water supplies, including those of the study locality.

The Biotic Environment

The project location is especially significant in that it encompasses a wide array of biotic communities and is adjacent to several others. Such diversity has characterized the area throughout the period of human occupation, although the particular nature of the biotic environment has changed appreciably. At various times during the Holocene the project area has featured diverse marine and terrestrial zones. The marine habitats have included sheltered outer coast, bays, and estuaries. Conditioned by this variation, as well as by a complex array of factors including type of substrate, degree of tidal exposure, intensity of wave action, and dilution by fresh water, intertidal shoreline areas also exhibit a wide range of habitat types (Ricketts et al. 1985). The intertidal strip is, biologically, one of the most productive zones on earth. In the lower portions of the study area intertidal zones formerly made a gradual transition to Freshwater Marsh, Riparian Woodland, and terrestrial communities. This transition was more abrupt on the mesas where Grassland and Coastal Sage Scrub existed (Munz and Keck 1970). Coastal Strand, now present along the southwest edge of the project area, likely occurred there from early Holocene times. Each of these biotic communities/ habitat areas is briefly described below.

Open Ocean/Protected Outer Coast/Bay

These zones would have existed within or near the project area during early Holocene times, and open ocean/protected outer coast are still present immediately southwest of it. Bolsa Bay initially provided sheltered habitats during the early Holocene, but gradually filled in with accumulating sediments to form an estuarine environment. The nearshore environment presently hosts plants and animals that live variously in surface, intermediate, and ocean-bottom zones. The ocean bottom in the project vicinity has changed gradually during the Holocene from a rocky substrate to sandy deposits, likely resulting in adjustments of the biota there.

Evidence from local archaeological sites indicates that prehistoric use of these zones focused on protected bays, with only limited procurement of resources in offshore waters. Animals from bay environments taken prehistorically include fish such as bat ray (Myliobatis californicus), guitarfish (Rhinobatos productos), possibly various sharks, and spotfin croaker (Roncador stearnsi) (Langenwalter and Huddleston 1986). Other fish, such birds as albatrosses (Diomedia spp.) and diving ducks (Chendytes spp.), and mammals such as sea otters (Enhydra lutris) and several types of seals (Pinnapeda) were either taken from open waters or near/on-shore environments using hooks and lines, nets, spears, and bows and arrows (cf. Blackburn 1963; Johnston 1955-1958; Koerper 1981).

Rocky Exposed Intertidal Zone

This intertidal zone likely existed along the seaward margin of the project area early in the Holocene. As sand accumulated along the shoreline, beaches and Coastal Strand would have replaced this type of environment. Diverse vertebrates, invertebrates, and seaweeds characteristically occupy rocky shores. This habitat was very accessible to prehistoric peoples, with seaweed collected and invertebrates easily taken.

Mollusks typically found in this zone, such as Mytilus californianus, Chama pellucida, Pseudochama spp., Haliotis spp., Astraea undosa, and Crepidula spp., are represented minimally at archaeological sites in the project area. Crustaceans, fish, and wading birds also might have been taken from this zone by prehistoric peoples.

Coastal Strand and Sandy Exposed Intertidal Zone

These zones developed as ocean levels began to stabilize and permit the emergence of sandy beaches in early Holocene times. They presently exist adjacent to the southwestern edge of the project area. Plant life is limited to the area above tidal influence, and commonly includes silver beachweed (Ambrosia chamissonis), sand verbena (Abronia spp.), saltbush (Atriplex spp.), and other vegetation. Various shellfish including Tivela stultorum, Saxidomus nuttallii, Donax gouldii, and others were collected prehistorically in small quantities from this zone; crustaceans, mollusks, birds, and other animals also were acquired on a limited basis.

Saltwater Marsh and Lagoon

These environmental zones developed within Bolsa Bay as sandy and muddy sediments built up along its intertidal margins. As alluviation continued, this estuarine zone expanded significantly. Typical vegetation includes pickleweed (Salicornia spp.), cord grass (Spartina foliossa), saltbush (Atriplex spp.), salt grass (Distichlis spicata), and other plants in areas generally above high water, as well as barren mud and sand flats. Many invertebrates live in the substrate, while wading birds such as sandpipers (Calidris spp.) and whimbrel (Numenius phaeopus), ducks, reptiles, and small mammals including sea otter (Enhydra lutris), beaver (Castor canadensis), muskrat (Ondatra zibethicus), and raccoon (Procyon lotor) also frequent this habitat. Less mobile animals, especially shellfish from this zone, were mainstays in the diet of local Indians in prehistoric times.

Mollusks of dietary importance have variable tolerances for the diverse conditions of salinity, substrate, and exposure which evolved in Bolsa Bay. For instance, the oyster (Ostrea lurida) requires a gravel substrate; alternatively, it may attach itself to other shellfish. Argopecten aequisulcatus, Polinices spp., Trachycardium quadragenarium, and Laevicardium substriatum prefer sandy bottoms with adequate tidal flushing, while Chione spp. and Tresus nuttallii can tolerate muddy substrates with more restricted tidal flows.

Freshwater Marsh

This biotic type occurs in low-lying areas saturated by groundwater and surface runoff, outside of the prism of saline intrusion. As sediments have accumulated and gradually risen above the mean high tide level in Bolsa Gap during the Holocene, Freshwater Marsh has expanded seaward to replace areas formerly occupied by Saltwater Marsh. The Freshwater Marsh is populated by many plants and animals important to prehistoric peoples of the region. Cattail (Typha spp.), tule (Scirpus spp.), sedge (Carex praegracilis), nettle (Urtica spp.), and arroyo willow (Salix lasiolepis) formerly were common in Freshwater Marsh habitats (Grunau 1975). Both large and small game--notably, mule deer (Odocoileus hemionus), mountain lion (Felis concolor), coyote (Canis latrans), rabbit (Sylvilagus spp.), black-tailed hare (Lepus californicus), and waterfowl--also frequented the Freshwater Marsh.

Riparian Woodland

This community formerly existed along stream courses where perennial sources of abundant surficial water were available. Riparian Woodland likely shifted within and near the project area as the course of the Santa Ana River and smaller streams changed course. Sycamore (Platanus racemosa), alder (Alnus rhombifolia), cottonwood (Populus spp.), and willow (Salix spp.) typify this community. Most of the animals common to the Freshwater Marsh also frequent the Riparian Woodland.

Grassland

This biotic community likely covered much of Bolsa Chica and Huntington Beach mesas during most of the Holocene. Prior to the introduction of exotics, native Grassland was dominated by bunch grass (Poa spp.) and needle grass (Stipa spp.), with scattered occurrences of Datura (Datura wrightii) and other plants. Prehistoric peoples harvested grass seeds and other plant materials from this environment; as well, they took small animals such as rabbits, hares, rodents, and game birds.

Coastal Sage Scrub

Presently covering the sides of bluffs within the project area, this biotic type may have been more extensive in the past. It is marked by low shrubs such as sage (Artemisia californica and Salvia spp.), coyote brush (Baccharis pilularis), and tree tobacco (Nicotiana glauca), and hosts varied small animals.

In addition to the biotic resources present in or adjacent to the project area, several other culturally important vegetation communities formerly existed not far away in the mountainous interior. Of particular significance to late prehistoric peoples of the region was the Southern Oak Woodland community, which consists of various kinds of oaks (Quercus spp.) interspersed with grasses.

The diverse resources in the Bolsa Chica locality provided a substantial inducement for both prehistoric and historic activities there. Changes in the types and distributions of biotic communities have resulted from alterations in the climatic, geomorphic, and edaphic components of the environment. However, accurate modelling of these transformations will require additional studies directed specifically toward reconstruction of the area's Holocene paleoenvironments.

Historic Changes

Beginning in the nineteenth century, a system of ditches was created to drain freshwater swamps and reclaim the land northeast of the project area for agricultural purposes. In 1899 the Bolsa Chica Gun Club was built on the southeastern tip of Bolsa Chica Mesa, and a dam and tidal gates were constructed from below the clubhouse to the sand dunes. Soon thereafter a new channel was cut northwestward along the seaward margin of the mesa to the Sunset Gap (now Huntington Harbour). In 1905 the gun club's dam was protested in a letter endorsed by Major H. F. Hodges (Office of the Chief of Engineers, U. S. War Department) and Captain C. H. McKinstry (U. S. Engineer Department, Los Angeles). A map accompanying this protest letter gives some indication of the original configuration of the Bolsa Chica lowlands prior to the construction of numerous levees used to create waterfowl ponds during the early twentieth century (Figure 2.3). With the discovery of oil in 1919, increasing development of the area occurred. This led to the construction of additional roads, levees, graded pads, and other land modifications. During this time the local groundwater table began to fall due to overdrafting from wells.

As a result of these changes, low-lying portions of the project area became increasingly isolated from both fresh and saline water inflows, resulting in significant changes in both vegetation communities and the animals which depended on them. Agricultural activities on the Bolsa Chica and Huntington Beach mesas in the twentieth century further reduced the area covered by the Coastal Sage Scrub community.

Summary

Over the past 10,000 years, the study area has witnessed significant physical and ecological change. Throughout that time the area has maintained a wide variety of habitats that afforded prehistoric peoples with diverse natural resources. An understanding of the physical and biotic changes that occurred in the project area would provide a background for evaluating its cultural resources, since those resources reflect cultural adaptations to the changing environment.

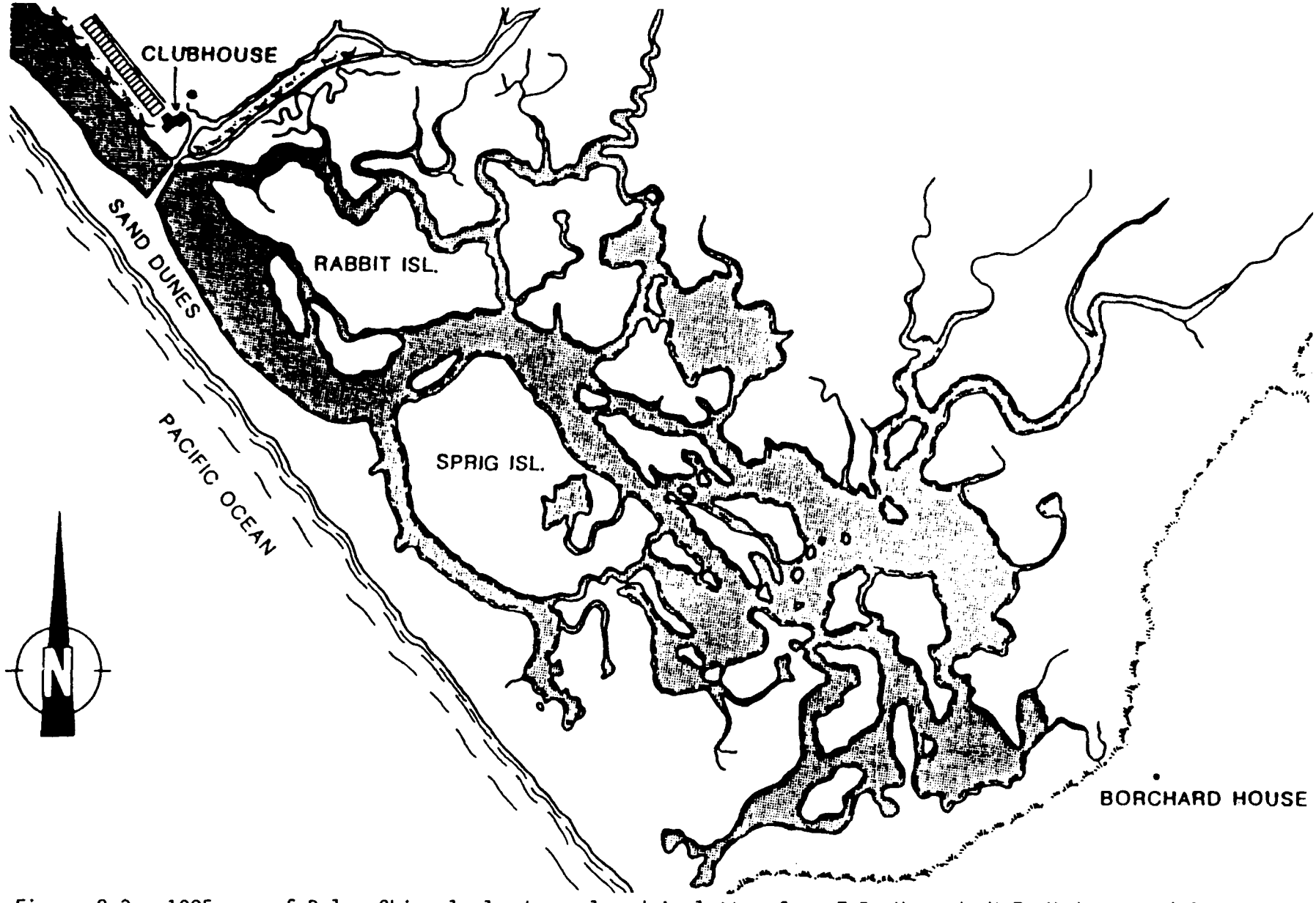

Figure 2.3. 1905 map of Bolsa Chica lowlands enclosed in letter from F.R. Hazard, H.F. Hodges, and C.H. McKinstry to President Theodore Roosevelt (Courtesy of the Bolsa Land Company, Huntington Beach).

3:

CULTURAL BACKGROUND

Portia Lee, Michael J. Moratto,
Jerrel H. Sorensen, and Thad M. Van Bueren

Introduction

This chapter summarizes past cultural developments in the project area. Topical coverage ranges from Gabrielino ethnography to recent history, with particular emphasis on changing land uses through time. This cultural overview provides a context not only for interpreting the archaeological record but also for understanding the nature and extent of past impacts on cultural resources.

Ethnography and Ethnohistory: the Gabrielino

> The Gabrielino held the great bulk of the most fertile lowland portion of southern California. They occupied also a stretch of pleasant and sheltered coast and the most favored one of the Santa Barbara Islands. They seem to have been the most advanced group south of Tehachapi, except perhaps the Chumash. They certainly were the wealthiest and most thoughtful of all the Shoshoneans of the State, and dominated these civilizationally wherever contacts occurred. Their influence spread even to alien peoples. They have melted away so completely that we know more of the fine facts of the culture of ruder tribes; but everything points to these very efflorescences having had their origin with the Gabrielino [Kroeber 1925:621].

Language and Territory

Bolsa Chica falls within the territory claimed in late prehistoric and early historic times by the Gabrielino Indians, named after "the Mission San Gabriel, near Los Angeles, where many were at one time gathered" (Hodge 1906:480). What these people called themselves is uncertain, although a Gabrielino woman living in Bakersfield recalled in 1903 that the name was Tong-vā (Merriam n.d.). The Luiseño referred to the Gabrielino as Tumangamalum, "Northerners," while the Hametwole Yokuts of Buena Vista Lake called them Miyah'hik-tchal-lop, "Long Arms." The Gabrielino also were named Pah-pí-na-mo-nam by the Kitanemuk, Ataplilísh by the Ventureño Chumash (Kroeber 1925:621), and Kisianos by the Cahuilla (Heizer 1968:105). Older published accounts have made reference to the Gabrielino as Kij or Kizh, "houses" (Hale 1846) and Tobikhar, "settlers" (Gatschet 1876).

Gabrielino-Fernandeño is a language belonging to the Cupan group of the Takic language family, a division of the Uto-Aztecan stock (Shipley 1978:90). Four dialects--Gabrielino proper, Fernandeño, Santa Catalina Island, and San Nicolas Island--are mentioned by Harrington (1962:viii). Kroeber recognizes only two, observing that Fernandeño, of Mission San Fernando, and Gabrielino were "distinguishable, but not notably so" (1925:620). As Kroeber points out, however, "if fuller knowledge were extant it might be necessary to recognize a half dozen dialects" (1925:620). The population of Gabrielino speakers in ca. A.D. 1770 has been estimated at 5000 (Cook 1976:38-39; Kroeber 1925:893).

The protohistoric Gabrielino occupied much of Los Angeles County, Orange County north of Alisos Creek, Santa Catalina Island, and probably San Clemente Island (Hodge 1906:480; Johnston 1962; Kroeber 1925:620).

> On the west, the Gabrielino limits... were at the minor watershed through which the Santa Susanna tunnel has been bored; at the coast, between Malibu and Topanga Creeks. Eastward,... the line probably passed from Mount San Antonio to the vicinity of Cucamonga, Mount Arlington, and Monument and Santiago Peaks; in other words, through western San Bernardino and Riverside Counties--although San Bernardino Valley has also been ascribed to the Gabrielino. Southward, Alisos Creek is cited as the boundary [Kroeber 1925:621].

West of the Gabrielino were the Chumash, maritime peoples whose languages are of the Hokan stock. Neighbors to the northwest and northeast, respectively, were the Tataviam and Serrano; the latter certainly, and the former probably, spoke Takic languages. East of the Gabrielino lived the Cahuilla and Luiseño, also speakers of Takic languages. Thus, except for the Chumash and possibly the Tataviam, the Gabrielino and all of their immediate neighbors were Uto-Aztecans (Bright 1975; Kroeber 1907, 1909; Shipley 1978). Boundaries and relationships with nearby groups are discussed by Johnston (1955, 1956a-f, 1957a-d).

The named ethnographic village of Lukup or Lupukngna is located in the Bolsa Chica vicinity, although its precise location cannot be correlated with assurance to a particular archaeological site in the area (cf. Johnston 1956e, 1962; Kroeber 1925:Plate 57). The following sections describing Gabrielino social organization, land use, trade, and material culture are adapted from an overview by J. Arnold (Goldberg and Arnold 1987).

Social Organization

A distinctive feature of Gabrielino society was its relative complexity. Despite a semi-nomadic hunting-and-gathering subsistence pattern, the Gabrielino recognized three hierarchically ordered classes or ranks. The elite consisted of the chiefs and their families as well as very rich families. A middle social stratum included old and respected lineages while the rest of Gabrielino society consisted of the individuals and families that held no unusual rights or status.

Deceased members of the society were cremated along with their possessions (Bean and Smith 1978). This type of mortuary behavior may affect archaeological interpretation of prehistoric sites because of the absence of burials, indications of social status, and various types of artifacts.

Each Gabrielino village was politically autonomous and economically self-sufficient. A village was usually made up of segmentary non-localized lineages. A village's population would seasonally break up into family units in order to exploit specific economic resources in different zones of the region. The leader of the dominant lineage in a village was also the village leader. A particularly strong leader with extensive lineage ties could become the chief of a series of related villages (Bean and Smith 1978; Johnston 1962).

Notwithstanding their independence, the Gabrielino cultivated associations and alliances with neighboring villages and even other groups such as the Chumash (Bean 1975). Such alliances were critical in order to maintain ritual observances, regulate intergroup rivalries, and to promote economic interaction and trade. Relationships with outside groups were important elements of Gabrielino economy and society. The most important commodity controlled by the Gabrielino was the steatite quarries on Santa Catalina Island. Steatite was carved into vessels, ornaments, and other items (Wlodarski 1979). This material was then exchanged with neighboring groups for shell beads, desired supplies of food, deerskins, or other materials, in addition to such exotica as obsidian tools (Koerper et al. 1986).

Land Use, Settlement, and Subsistence

The Gabrielino distributed their settlements across four broad environmental zones, each of which included desirable sets of resources. These zones included the interior mountain/foothills, prairie, exposed coastline, and sheltered coastal areas (Hudson 1971). Generally, the subsistence/settlement system of the Gabrielino could be characterized as semi-sedentary hunting-gathering. Family groups moved seasonally in order to maximize the harvesting of the different biotic resources in the various zones within their territory. Ethnohistoric sources list some of the resources that the Gabrielino procured. Important plants included native grasses, acorns of at least six types of oaks, piñon pine nut, fresh greens, as well as seeds, berries, and fibers from various shrubs and cacti. Large game included mule deer, antelope, and mountain sheep. Smaller game such as rabbits and rodents, quail, waterfowl, snakes, lizards, insects, freshwater fish, as well as various marine fishes, shellfish, and some sea mammals were also important.

The settlement and exploitation of the mountain/foothill zone consisted of many small secondary gathering camps in areas where nuts, seeds, deer, and small game could be taken. These camps were occupied principally by single family units able to move quickly to exploit available resources. Larger, more permanent settlements were situated near sources of permanent water. These settlements may have included several families representing a number of different clans. The prairie zone covered the broad interior valleys and plains. These relatively

hot and dry regions supported mostly sage, yucca, cacti, and associated rodents and reptiles. However, where moisture permitted, marshy areas supported a greater diversity of plants and animals and were the loci of gathering camps as well as a few larger villages. South of San Pedro, the coast was rich in marine and intertidal resources. It appears, however, as though most of the larger, more permanent villages were located inland from the shore where they were relatively protected from winter storms. The northern coast, from Malibu to San Pedro, was more sheltered; in addition to the rich marine, coastal and estuary resources, this stretch of coast featured large stands of oak and sage in close proximity. The close association of such productive resources supported both small and large settlements (Hudson 1969; 1971).

Trade

Cultural elaboration was in part made possible by the endowment of natural resources within Gabrielino territory, including the primary source of steatite for the southern California region (Heizer and Treganza 1944; Wlodarski 1979). Steatite vessels, pipes, ritualistic objects, other finished items, and raw material from Santa Catalina Island are widely distributed in archaeological sites of the region, attesting to the magnitude of economic interactions between the Gabrielino and neighboring groups. This economic exchange was particularly vigorous with the Chumash, creating a strong reciprocal influence between the two groups that included many shared elements of religion and cultural material (Kroeber 1925:567-569). The Gabrielino also traded steatite, sea otter skins, dried fish, shell beads, and other resources to interior groups including the Serrano, from whom they received acorns, deer hides, and seeds (Davis 1961:22). Items originating in Gabrielino territory have been reported as far east as Arizona, and southwestern ceramics have in turn been found in the Gabrielino area, indicating the range of their trade network (Johnston 1955:182). Exchanges were accomplished either directly through barter, or by means of certain shell beads which functioned as money (Heizer 1968).

Material Arts

Gabrielino material culture is considered to be elaborate and characterized by a high degree of artisanship comparable with that of the Chumash. Common artifacts include shell ornaments, spoons, fishhooks, and beads; bone tools; baskets; flaked stone projectile points, knives, and drills; mortars and pestles; wooden bowls, paddles, and war clubs; steatite ornaments, bowls, and comals, as well as many other utensils (Amsden 1935; Blackburn 1963). One interesting artifact associated with the Gabrielino is a wooden hunting stick thrown to knock down game animals. This kind of weapon would rarely be preserved in an archaeological context; hence, its absence and the paucity of projectile points may have caused archaeologists to underestimate the role of hunting among the prehistoric Gabrielino.

Gabrielino clothing and architecture were not distinctive and conformed with general patterns common to southern California. Clothing was minimal save for the winter when capes, skirts, and blankets of

deerskin, rabbit fur, and bird skins were employed to fend off the damp and cold (Bean and Smith 1978:541). Gabrielino structures consisted of large, circular, domed, thatched residences which could accommodate from two to four families. Each settlement included small earthen sweathouses, menstrual huts, and ceremonial enclosures. Bedding typically consisted of fiber mats and animal fur blankets (Harrington 1942).

The coastal Gabrielino made sea-going plank canoes, patterned after those of the Chumash (see Hudson et al. 1978). Boats up to 26 feet long, able to carry 20 or more passengers and cargo, are reported (Blackburn 1963:22-23). Such vessels made possible the brisk trade between offshore islands and the mainland. Tule balsas and simple dugout canoes were also used by the Gabrielino (Harrington 1942:11).

Steatite vessels were preferred for cooking, although baskets and pottery were also used for that and various other purposes including food and water storage, collection trays, mats, and caps. According to Johnston (1956a:18) the Gabrielino made no pottery before Mission times. Both leaching basins and earth ovens were used in food preparation, as were stone bowls, hopper mortars with pestles, and millingslabs with manos (Harrington 1942:8-9).

Religion and Ceremonies

The Gabrielino religious system focused on the worship of the god Chinigchinich or Qua-o-ar, although the sun, moon, and other natural entities and forces figured prominently in their system of beliefs. Several creation stories account for the origins of the natural world at the hands of that god (Heizer 1968:19), or an evil predecessor named Wiyot who was killed by his sons, setting the stage for ascension of Chinigchinich (Boscana 1978). The belief in Chinigchinich was highly ritualized, and involved the toloache cult, construction of sacred temples featuring ornate poles with banners, and a host of elaborate ceremonies including offerings of food and artifacts (Bean and Smith 1978:548). Sand paintings, likely a trait adopted from contacts with Southwestern peoples, were also incorporated into the ceremonies of the Gabrielino (Harrington 1942). The Gabrielino religion spread to various neighboring groups including the Cupeño, Luiseño, Juaneño, and Ipai-Tipai, and apparently influenced the religious systems of the Chumash as well (Kroeber 1925).

Historic Contacts

The first Euroamerican contacts with the Gabrielino came on October 7, 1542, when members of Juan Rodriguez Cabrillo's expedition landed on Santa Catalina Island (Heizer 1972:30). Juan Paez de Castro in the 1550s summarized the original report (now lost) of the first encounter:

> As the boat was nearing land a great number of Indians came out of the bushes and grass, shouting, dancing, and making signs to come ashore. As from the boats they saw the women fleeing, they made signs to them not to fear; so shortly they became assured and put their bows and arrows on the ground. Launching into the water a fine

> canoe containing eight or ten Indians, they came out to the ships. These were given some beads and presents with which they were well pleased, and shortly went back. The spaniards afterwards went ashore and both the Indian men and women and everybody felt very secure. Here an old Indian made signs to them that men like the Spanish, wearing clothes and having beards, were going around on the mainland. They remained at this island only until midday [Wagner 1928:47].

A day later, the ships approached the mainland and sailed into the "Baia de los Fumos" (Bay of Smokes), which Wagner (1928) identifies as San Pedro Bay. There,

> they engaged in intercourse with some Indians they captured in a canoe, who made signs to them that towards the north there were Spaniards like them. The bay is... an excellent harbor and the country is good, with many valleys, plains, and groves of trees [Wagner 1928:47].

Cabrillo subsequently anchored in Santa Monica Bay, but Paez de Castro's account makes no further mention of the Gabrielino.

Sixty years after Cabrillo's expedition, the Gabrielino again were visited by Euroamericans when Sebastián Vizcaino explored the California coast. Between November 25 and December 1, 1602, Vizcaino's ship was anchored in Avalon Bay, at Santa Catalina Island. Fray Antonio de la Ascensión, who sailed with Vizcaino, provided in his diary the earliest detailed account of Gabrielino ethnography (Ascensión 1615).

> He describes their canoes, equipment, and techniques for fishing and capturing seals, food and clothing... . His description also covers the islanders' physical characteristics, houses, utensils, dogs, and items used for bodily decoration... . Ascensión comments on the islanders' participation in exchanges with the mainlanders... . He also notes that there were "many Indians and many settlements" on Santa Catalina and neighboring islands... . Ascensión's account includes a detailed description of a ceremonial structure on the island and frequent mention of the importance that the Indians placed on crows [LaLone 1980:15].

Although the visits by Cabrillo and Vizcaino had little lasting effect on the Indians of southern California, later contacts, beginning with the Portolá expedition of 1769-1770, paved the way for missionization and its overwhelming consequences. Gaspar de Portolá and members of his party recorded many valuable observations about the environment, locations of Indian settlements, and native customs as they passed through Gabrielino territory (cf Costansó 1911; Crespi 1926; Portolá 1909). The accounts of Pedro Fages (e.g., 1937) are especially notable for their detail on Gabrielino ethnography.

Following the Portola expedition a new phase of Indian/European contact began in California as the systematic missionization of the region commenced and from which the Gabrielino received their current name. With the establishment of Mission San Gabriel Arcangel at the heart of their territory in 1771, and the subsequent development of Missions San Juan Capistrano (1775) to the south and San Fernando Rey de Espana (1797) to the north, Gabrielino culture was soon eclipsed. Following the familiar pattern of other native peoples, Gabrielino population began to decline quickly in the face of new diseases as well as other physical and social stresses (Cook 1976). As a result of these accumulated stresses, Gabrielino culture ceased to exist by 1900 (Bean and Smith 1978:540-541). As for most Native American groups in California, ethnographic and ethnohistoric information on the Gabrielino is limited. When scholars such as Harrington and Kroeber began their studies of California Indians the Gabrielino had already dwindled to a small population heavily influenced by the acculturating effects of the mission system as well as by the policies of subsequent Mexican and United States governments. Nonetheless, despite nearly two centuries of contact with more powerful and dominant cultures, knowledge of some remnants of the Gabrielino has survived.

History

Introduction

For purposes of this study, the geographic area being considered from a historical perspective is coterminous with the study area designated by the Orange County Environmental Management Agency for the Bolsa Chica Local Coastal Program. Coastal Orange County is divided into four planning units; Bolsa Chica is one of six noncontiguous segments composing the Agency's North Coast Planning Unit. The Bolsa Chica segment area includes 1600 acres of unincorporated land in the northeastern part of the county surrounded by developed portions of the City of Huntington Beach and Bolsa Chica State Beach. In preparing the Land Use Plan, the County also considered as part of the study area additional acreage that was generally contained within the boundaries of the California Coastal Commission's Habitat Conservation Plan of 1984. The study area is bordered on the west by the Pacific Coast Highway and Bolsa Chica State Beach, on the southeast by open land mainly in oil production, on the east by residential development, and on the northwest by Huntington Harbor.

Spanish and Mexican Land Grants

In 1784 Corporal Manuel Nieto, a soldado de cuero with many years of service at the Presidio in San Diego, applied for and received from Governer Pedro Fages a grant for Rancho la Zanja, a property of nearly 300,000 acres lying between the Santa Ana and San Gabriel rivers, and extending from the foot of the San Gabriel Mountains to the Pacific Ocean (Figure 3.1). The Nieto holdings decreased to 167,000 acres in 1803 when Mission San Gabriel Arcangel received a portion of the land nearest the mountains.

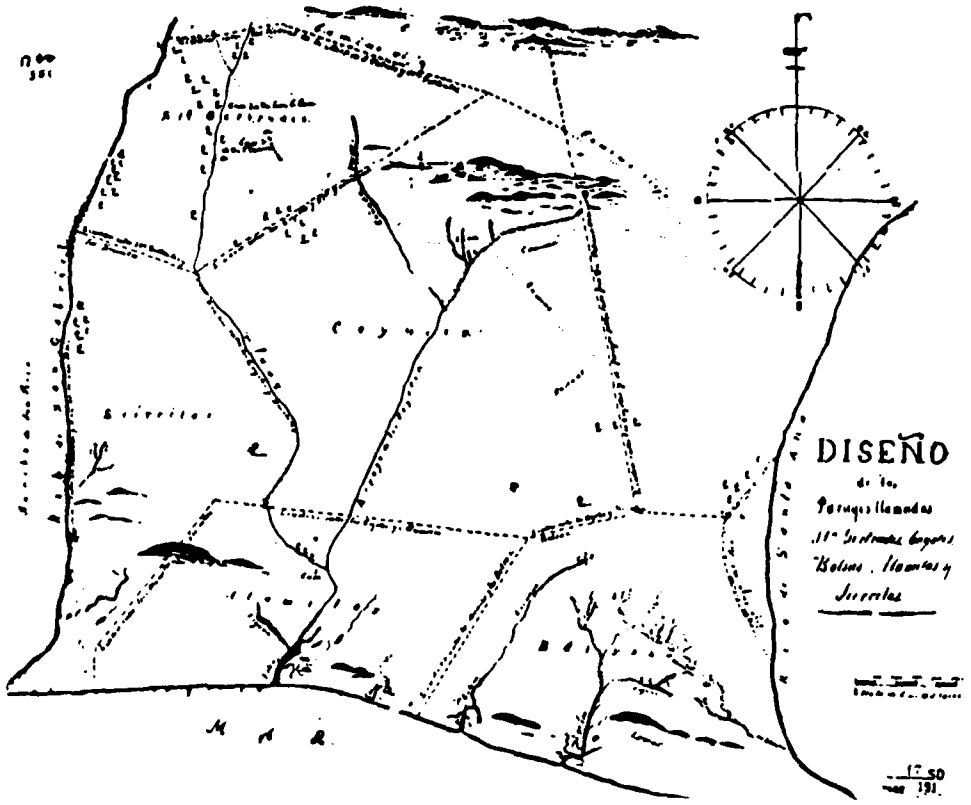

Figure 3.1. The Nieto Land Grant of 1784 (from Harrowby 1973:I-1).

Nieto's children and widow, Maria Teresa Morillo, continued to live on the property after his death in 1804. In 1834 the holdings were confirmed to the heirs and divided. Manuel Nieto's grandson, José Antonio II, who had married Catarina Ruiz, inherited a portion of the southern part of the rancho, which lay west of the mouth of the Santa Ana River. In the course of time, the river had changed its course to the ocean, leaving pockets (bolsas) of grassland between the old stream beds and the marshes. On Rancho las Bolsas, José Antonio Nieto ran a large herd of cattle and bred riding horses until his death in 1832.

Five ranches had been created out of Rancho la Zanja, but only Rancho las Bolsas was still in the hands of Manuel Nieto's descendants when California became a state. To finance the presentation of their claims to the United States Lands Commission, Catarina Ruiz de Nieto, a neighboring rancher, Ramón Yorba, to whom she had sold an interest, and her son-in-law, José Justo Morillo, borrowed money from entrepreneur Abel Stearns. The heirs could not meet Stearns' note when it came due, and he gained title to the ranch at auction (Orange County Genealogical Society 1969:117-124, 153).

Two adobes were built on Rancho las Bolsas. The site of the Morillo adobe, the home of José Justo Morillo and his wife, Maria Cleofa Ruiz, is marked on the Los Angeles County Recorder's 1877 map as "House of the widow Morillo." Located between Huntington Beach and Wintersburg, near the junction of Talbert and Gothard Streets, it was occupied in 1861 by José Antonio Morillo, the brother of José Justo, and his wife, Maria Rafaela Romero, in defiance of the claims of Abel

Stearns. The adobe was still standing, though unoccupied, in 1890 (Meadows 1966:89; Orange County Historical Project 1936: "Adobes" folder, 88).

After the United States Land Commission confirmed José Ramón Yorba's claim to the share of Rancho las Bolsas he had purchased from Catarina Ruiz, he built an adobe on land about 1.5 miles southeast of the town of Bolsa, about 0.25 mile beyond the western end of Wintersburg Avenue. Yorba was a bachelor who seems to have shared the home with members of his family who were also co-partners in the claim. Called the Paredes adobe, probably on account of numerous Yorba relatives in that family, it was constructed in 1854 and apparently destroyed before the Morillo adobe since it does not appear on the 1877 map. Abandoned by the Yorbas upon the sale of las Bolsas to Abel Stearns, the home was thereafter used by cattlemen, probably mayordomos of Stearns (Orange County Historical Project 1936: "Adobes" folder, 87-88).

In the 1830s Catarina Ruiz de Nieto's brother, Joaquin Ruiz, used some of the marshland to graze sheep. The widow encouraged her brother to petition the governor for an adjacent grant. In 1842 Governor Juan Batista Alvarado gave him full title to some 8000 acres bordering the ocean. Called Rancho la Bolsa Chica, the property ran from a willow tree on the seashore to the borders of a water-filled inlet that could not be crossed. The distance from the inlet to the top of the mesa, which the survey arty reckoned to be approximately 1.5 miles, was put down in the official record and a boundary marker erected on the mesa top (Orange County Genealogical Society 1969:123).

To prove his claim before the Land Commission in 1854, Joaquin Ruiz, too, borrowed money from Abel Stearns, but the claim was not certified during his lifetime. A survey notice was published in 1861. Patent to the grant was signed by Ulysses S. Grant in 1874. However, when the heirs were unable to repay the loan and interest, Stearns foreclosed and the rancho was added to his vast holdings (Department of Fish and Game 1974:3).

Very little is known about the adobe on Rancho la Bolsa Chica. It was built by Joaquin Ruiz and was still standing in 1889 when it was used as a cook and bunk house by a farmer on the Mesa. The building was described in 1934 as "a small two roomed adobe about 16 x 36 feet in size, situated not far from the building of the Lomita Riding Club." It, too, was later utilized by the Stearns Ranchos Trust (Orange County Historical Project 1936: "Adobes" folder, 87).

Stearns himself was nearly bankrupt after the drought of 1865. The Stearns Ranchos Trust was formed to sell his extensive property to the Los Angeles and San Bernardino Land Company. Rancho las Bolsas was partitioned and a portion sold to the Westminster Colony in 1871; the remainder became the cities of Huntington Beach, Garden Grove, and Fountain Valley. The small settlements of Sunset Beach, Wintersburg, Bolsa, and Smeltzer located on the Bolsa Chica grant (Orange County Genealogical Society 1969:153).

Gospel Swamp

Except for the Huntington Beach Mesa, the coastal area extending from the Newport Mesa to the Bolsa Chica Mesa and easterly into the country approximately 7.5 miles was marshland (Figure 3.2). Peat springs and artesian wells which flowed year round often flooded the 30 square mile area which blackberry vines, tules, willows, sycamores, and shrubs made nearly inaccessible. However, the land could be freely used and water and wood abounded. The area became the site of religious camps and revival meetings and so earned the name "Gospel Swamp." The terrain gave refuge to ducks, geese, and birds and provided cover for wildcats, raccoons, feral hogs, coyotes, and badgers. Rattlesnakes, whose natural habitat was the upland mesa, sometimes floated in on flood waters (Talbert 1952:37). This district was also called "The Willows." Whenever the settlers, many of whom were squatters, needed groceries or supplies, they would cut a load of willow wood and haul it to Santa Ana where there was always a market for fuel. Once cleared, the peat fields yielded abundant crops. Farmers' claims about crop yields and the size of melons and pumpkins harvested were sometimes considered exaggerated by other county residents (Orange County Historical Project 1936: "Cities and Towns" folder, 1).

After Orange County was chartered, the Bolsa Ditch was constructed under the provisions of the State Drainage Act of 1881 to drain local swamp lands. Costs were borne by adjacent property owners in proportion to benefits derived. Large scale agricultural production began when D. E. Smeltzer, a Michigan celery shipper, found wild celery growing in the peat bogs. Smeltzer and E. A. Curtis leased land south of Westminster and began production with financial help from the Earl Fruit Company who also furnished seed, horses, and plows.

Finding no experienced labor locally, Curtis engaged a Chinese labor contractor to furnish a crew of skilled truck gardeners to put in 80 acres of celery. Costs ran high the first season as the Chinese labor crew was threatened by local residents who stole their tools and burned their barracks. The Earl Fruit Company was forced to patrol the area with watch dogs; guards had orders to shoot anyone interfering with the workers. Farming in the peat fields required ingenuity. Dobbins, workhorses with large feet, were shod with flat wooden shoes to keep them from sinking into the bogs. However, the crop turned a profit. After the Southern Pacific Railroad constructed an 11-mile branch line from Newport Beach to Smeltzer in 1902, 1800 carloads of celery were sent to market from Smeltzer and Wintersburg, the main production centers. The villages of Bolsa and Celery were also "peat bog" stations along the rail line between Newport and Los Alamitos (Friis 1965:104; Parker 1963:67). Celery culture exceeded 275,000 acres, becoming one of the major industries of the county, extending from the peat bogs over a large part of the "Willows." However, the fertility of the land began to decline in 1906 and the crop was attacked by diseases--rust, blight, and rottenheart. By 1919, only a very small acreage of special varieties was under cultivation (Armor 1921:166-167).

Orange County's sugar beet crop suffered a similar disaster. A large sugar processing plant, one of five in the county, was set up in

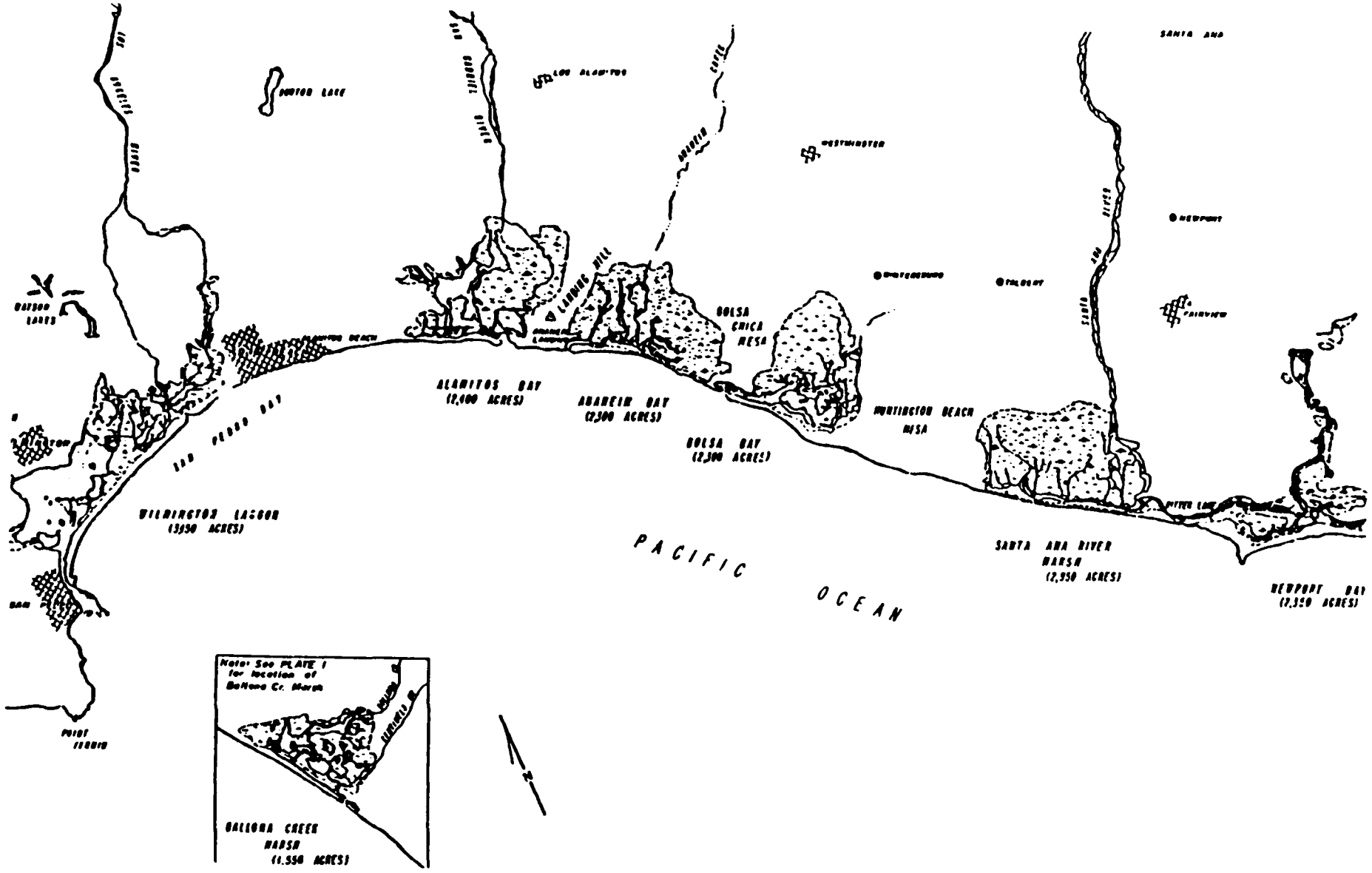

Figure 3.2. Coastal marshes of Los Angeles and Orange counties in 1894 (after EDAW, Inc. 1979:Plate 3).

the company town of Los Alamitos, north of Anaheim Landing, in 1896. Senator William A. Clark of Montana and his brother, J. Ross Clark, had received a five-year guarantee from the Bixby Land Company of a sufficient quantity of beets for a profitable operation. A demonstration crop was put in 0.25 mile west of Talbert and by 1915 the factories were producing sugar worth $8,000,000. Business declined in 1919 on account of plant diseases, and the industry as a large-scale operation was effectively ended (Adams 1926:104-105).

The towns of Smeltzer, Wintersburg, and Bolsa also developed along with agricultural production at the turn of the century. Smeltzer, another company-owned town, had a store, a small hotel, a telephone office, blacksmith's forge, and barn large enough for 50 teams of horses. At Wintersburg, located one mile south of Smeltzer, a National Guard company was formed and an armory built. Bolsa was laid out as a town site in 1890. Along with a general merchandise store, school, and church, it had a creamery whose owner, P. Raab of Pasadena, persuaded nearby farmers to raise and milk dairy cattle (Orange County Historical Project 1936: "Cities and Towns" folder).

Talbert was located in the center of the Gospel Swamp. The James Talbert family bought an interest in the general merchandise store whose building had been erected by John Corbett in 1899 at the Fountain Valley crossroads. Residents petitioned the Post Office Department in Washington, D.C. to establish a mail delivery center. Talbert was chosen as the name for the post office when the two-word designation of Fountain Valley was refused. The post office, authorized to write foreign as well as domestic money orders, issued a substantial dollar amount in orders going to Mexico from migrant laborers. Since there was no rural free delivery, mail was picked up at the store. Letters and packages came from Santa Ana via Bolsa; the mail was then brought on to Talbert via horse and buggy. In 1901 delivery was established between Talbert and Huntington Beach (Parker 1967:67).

The village at the crossroads continued to grow. A school district was established and a school house built on an acre of land, about a mile east of the store, which had been donated by rancher Robert Wardlow. The Talberts gave $50 and 0.5 acre of land to found a Methodist church. However, dairy ranchers had to drive to Bolsa or Westminster to deliver their milk. Storekeeper and postmaster Tom Talbert then persuaded Raab's Creamery Company to set up a cream separator between his store and the church. Residents of the thriving community could now satisfy most of their essential needs close to home.

Talbert and its ranching neighbors still lacked a link to the outside world. The Sunset Telephone and Telegraph Company would not extend the line from Bolsa, a distance of 3.5 miles, without an advance guarantee of $200 for the first two years. Tom Talbert sold $200 worth of coupons good for two years and gave the telephone company the cash. Sunset Telephone and Telegraph agreed to accept the coupons as payment on monthly bills. A telephone was then installed in the Talbert store.

Residents soon felt the need to make local telephone calls to one another as well. The Smeltzer Telegraph and Telephone Company was

organized with its office at Smeltzer. Subscribers invested $50 apiece and worked cooperatively to string wire along fence posts and willow trees from ranch to ranch. Rates were a dollar a month per phone, and there were two-, three-, five-, and six-party lines. The company, which paid expenses and showed a small profit, was eventually acquired by the Huntington Beach Telephone Company (Talbert 1952:48-51).

By the turn of the century, the Stearns Ranchos Trust had sold the swamp lands surrounding Huntington Mesa from the Bolsa Chica Rancho line north to Westminster and across the valley east to the Santa Ana River. At the last sale of the Company lands, Colonel Robert Northam, its manager, bought Huntington Mesa. Only three houses had been built: the Northam ranch house, the Bushard house near the site of what was to be Bolsa Chica oil well No. 1, and the two-story A. J. Friend house on the east point of the mesa. A syndicate contracted to buy the mesa from Colonel Northam and laid out a townsite of 40 acres along the beach. However, another group, the Huntington Beach Company, eventually purchased the townsite. H. E. Huntington was granted a right-of-way along the ocean front, one-twelfth of all subdivided lots, and one-fifth interest in all ocean-front bluff property in return for extending his Pacific Electric Railway to Huntington Beach (Talbert 1952:69-70; Parker 1963:70).

Flood Control--The Talbert Drainage District and the Newbert River Protection District

Flooding was a major concern for the early farmers and ranchers of Gospel Swamp. The rock shelf paralleling the seacoast prevented underground water from escaping into the sea and created the aquifer that fed underground springs and artesian wells. Surface water was prevented by high sandbars along the beaches from flowing into the ocean. These natural features forced runoff into the bed of the Santa Ana River which often took a shifting course in high water years, emptying into the ocean at Los Patos or swinging west to join the San Gabriel River and flowing into Alamitos Bay, rather than following its usual course across the Newport Harbor flatlands to meet the ocean at Corona del Mar.

In 1898 the first County survey of the area staked and measured the land from Bolsa south to the ocean. Since Talbert was above the high tide mark, the land could be drained. The Talbert Drainage District was formed and $20,000 in bonds voted to pay for the drainage canals which were to run 0.5 miles apart, south to the arm of the bay. The first canal was dug along Cannery Road running north from the tidal slough to Talbert Road; a second was dug along Bushard Road. Each farmer agreed to pay $1 per acre for all the land he owned within 0.25 mile of either bank of the ditch. Main drainage canals were open ditches, 5 to 6 feet deep and 10 to 12 feet across. The ditches were filled in at a later date and underground tile installed. Once the Drainage District was formed, a tax was levied in accordance with the value of the land to maintain the system.

In order to confine the Santa Ana River to a definite bed, the Newbert River Protection District was formed in 1900. The district

extended for 18,000 acres from Santa Ana and the Orange County Hospital on the north to Garden Grove and Huntington Beach on the south and the Costa Mesa bluffs on the east. Control of the river had become mandatory since a flood necessitated the expensive procedure of redigging the canals. Bonds for $185,000 were voted to purchase a 300-foot strip for a permanent river bed. A channel was dredged and levees built to contain the flow (Talbert 1952:57-61).

The Bolsa Chica Gun Club

The Bolsa Chica Gun Club property lay on an inlet bay whose channel emptied into the sea at Los Patos. The upper bay was fed by Freeman Creek, a freshwater stream. Since the Bolsa Chica area was the habitat for an enormous number of upland game birds, waterfowl, and other wildlife, sportsmen and game hunters organized clubs to buy land. In 1895 the club, through member H. M. Dobbins, applied to the state for permission to reclaim the salt water marshlands, an action that would result in closing off a natural tidal channel to the ocean. The concession was granted under the State Tidelands Overflow and Reclamation Act, and the club then acquired title to approximately 528 acres of Bolsa Bay tidelands which extended inland into the upper bay.

A third dam, constructed after the destruction of the first two, was able to withstand the tidal prism moving at three miles per hour. Automatic tide gates operated to hold back the salt water when the tide was high and let out the fresh water when it was low, keeping the salt water from rising above the dam. Tidal waters were prevented from entering the bay, and fresh waters from Freeman Creek were prevented from draining into the ocean. A waterfowl habitat ideal for hunters was created because the dam changed the character of the wetlands from feeding grounds to resting grounds. Since the damming caused the permanent silting up of the bay's natural opening, a substitute channel connecting Bolsa Chica Bay and Anaheim Bay was cut through to the east (Talbert 1952:41-43; Thomas v. Bolsa Land Co. 1905).

Papers for incorporation of the Bolsa Chica Gun Club were filed on March 10, 1899. Count Jaro Von Schmidt of Los Angeles was listed as president. The club's ground dedication and opening shoot were held from October 17-19, 1899. Shooting grounds were in the southeastern lowlands. Ponds were filled by pumps that lifted the water 4.5 feet from the lower canal of the Bolsa Drainage District Ditch. Club rules designated Wednesday and Saturday as the seasonal shooting days; hunting stopped at 4 p.m. Shooting was done from blinds or boats. In 1913 an article in the Santa Ana Register reported that members and their guests had killed 8633 ducks in the previous season.

The Bolsa Chica Gun Club was described as "more than a gun club. It is boating club, fishing club, a summer home club, a place to get away from the rush of business and the wear and tear of city life" (Santa Ana Register 1913). Probably constructed around the time of the club's incorporation in 1899, the redwood building had dormer windows and was roofed and faced with cedar shakes (Figure 3.3). There were several fireplaces in the card and gun rooms and an immense fireplace of burnt brick in the main assembly room. Two wings each housed 10

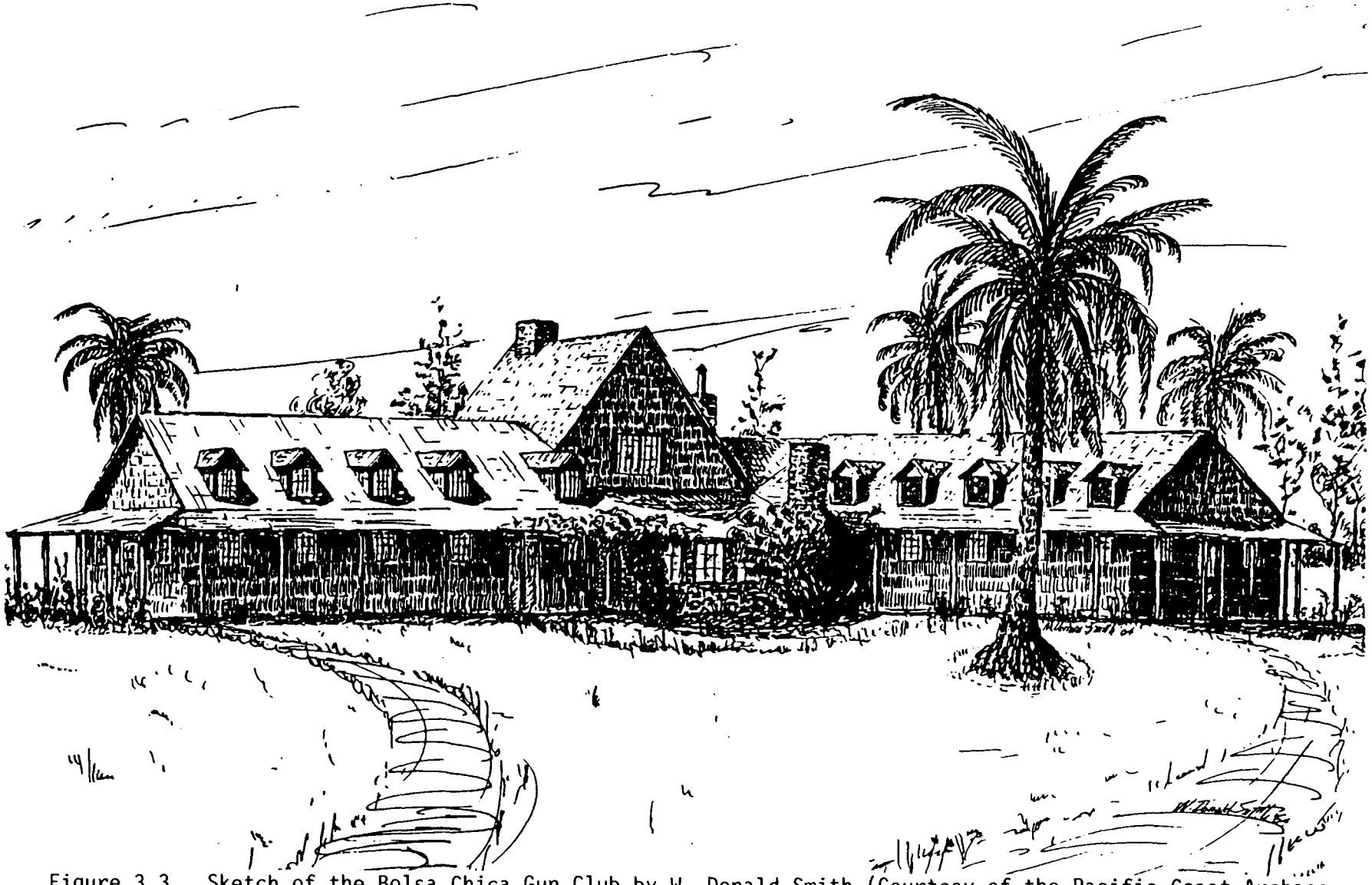

Figure 3.3. Sketch of the Bolsa Chica Gun Club by W. Donald Smith (Courtesy of the Pacific Coast Archaeological Society).

bedrooms with double wardrobes and wash bowls. The wings were probably expanded to the 10-bedroom size, since an early photograph shows only three dormers on each side. Apartments for employees were behind the kitchens, pantries, and wine and supply storage rooms. On the north side, next to the curving drive, stood an ivy-covered arbor with individually labeled rows of hooks for hanging ducks. During construction of the club house, a water well was drilled which showed so much natural gas that it could not be used. Workmen placed a large tank over the well and sealed it; the natural gas was used for cooking and lighting the club house. The discovery foreshadowed the future course of the club's history (Smith 1965, 1969; Talbert 1952:43).

In 1920, oil was found at Huntington Beach. After this discovery, the Bolsa Chica Gun Club leased drilling rights on the upland portions of the Bolsa Chica to the Standard Oil Company of California. The wetlands were kept as a waterfowl preserve. Through the 1930s, derricks proliferated on the high ground. By the end of the Depression, the club had decided to open the swamplands to oil exploration and a contract was awarded to the Signal Oil Company in June of 1940. The gun club was disbanded in January of 1964, and the clubhouse demolished in July, 1964 (Smith 1965; Tompkins 1964:125).

Natural Resources: Oil and Gas

While the Gun Club was negotiating for the oil leases on the marshes, the federal government was laying claim to the mineral rights on tidelands and submerged areas. The Bolsa lease had been surveyed, but there was no known landmark or monument. U.S. Deputy Surveyor Henry Hancock had surveyed the area in 1855, establishing a township line in accordance with the line of the Bolsa Chica land grant of 1840. Hancock's 1.0 mile and 0.5 mile section corner posts had disappeared, but his notes in Book 69 of the County Surveyor's office referred to a triangulation marker on Rancho la Bolsa Chica, a three-inch square of hemlock charred to resist decay. The decomposed post had left a cast in the clay, which was documented and noted in company files. Land titles could now be correlated with the physical aspect of the land (Tompkins 1964:127-128).

Following the acquisition of its lease with the Bolsa Gun Club tenants-in-common, Signal began to build access roads on the elevated dikes. Nine hundred acres directly south of the first lease were contracted for in 1943. Sixty-eight wells were drilled on the southerly lease for a total production of more than 8 million barrels of crude oil and more than 10 billion cubic feet of gas. The southern field included an area adjacent to the ocean where wells were brought in by directional, or slant drilling. By 1936 refineries and natural gas plants were also in operation on the field (Orange County Historical Project 1936: "Natural Resources-Oil" folder, 20-21; Tompkins 1964:129).

The use of a portable servicing derrick along with derrick-skidding techniques resulted in the Bolsa Field's being developed without the use of permanent derricks. In the Bolsa Field Signal Oil also pioneered the use of a centralized hydraulic pumping system which did away with the

conventional walking beam unit. By 1963, 188 wells had been completed on the Bolsa lease; the area remains an active oil field (Friis 1965:130-131; Tompkins 1964:129; Weaver and Wilhelm 1934).

World War II Installations

After the Japanese attack on Pearl Harbor, the Pacific coast was fortified. Artillery and searchlights were placed on the Bolsa Chica Mesa (Figure 3.4). The fortifications wre designed and built by the United States Army Corps of Engineers and manned by the Army's 3rd Coast Artillery Regiment. The headquarters command group, Harbor Defenses of Los Angeles, was located at Fort MacArthur. Within the first six months of the war, two field artillery weapons, 155-millimeter guns, were emplaced on Panama mounts, platforms consisting of a segment of curved rail embedded in concrete along which the gun's twin trails could be moved. The mobility of the gun, also known as Model 1918 GPF, had been improved between the wars by providing it with modern wheels and pneumatic tires rather than cast-steel wheels. The 155s were rushed in large numbers to both coasts in the early days of the war to guard unfortified positions (Lewis 1979:108; U.S. Army 1945:6-13).

Sometime in 1943 construction was begun on a site for two 6-inch coastal batteries. Battery Harrison, also known as Battery 242, was part of an installation to consist of an ammunition storage facility, plotting room, and powder magazine, all constructed of steel reinforced concrete seven feet thick (Don Young, personal communication 1988). These guns were not casemented, that is, placed within concrete bunkers. Instead they were provided with all-around curved shields of cast steel four to six inches thick; their range was 15 miles (Lewis 1979:109).

Battery 242 appears to have been put into service after the war had ended. Orders from headquarters, Harbor Defenses of Los Angeles at Fort MacArthur, dated 15 September 1945, were to continue to man the 155s until Battery 242 was completed, then to "activate and man Battery 242 on a training status" (Monnett 1945:31). Although no guns remain on the site now, parts of the installations are still in place.

Late in the war the Corps of Engineers started work on Battery 128 which was to be composed of two 16-inch guns. These were never installed. Nonetheless, an earth-covered concrete structure, 500 feet long by 100 feet in depth, whose reinforced concrete roof was 16.5 feet thick, was built. It would have been located between the two guns, housing the ammunition storage facility, the power generator, communication and storage rooms, and a corridor. It is probable that the installation followed the common pattern of 16-inch emplacements which located the plotting room at some distance from the guns.

Battery 128 was never completed, though one may assume that what was built closely resembles other installations of its kind. The authoritative reference of the period states "in terms of battery types, World War II fortifications were among the least varied ever constructed by the country; both weapons and installations were standardized to an unprecedented degree" (Lewis 1979:118).

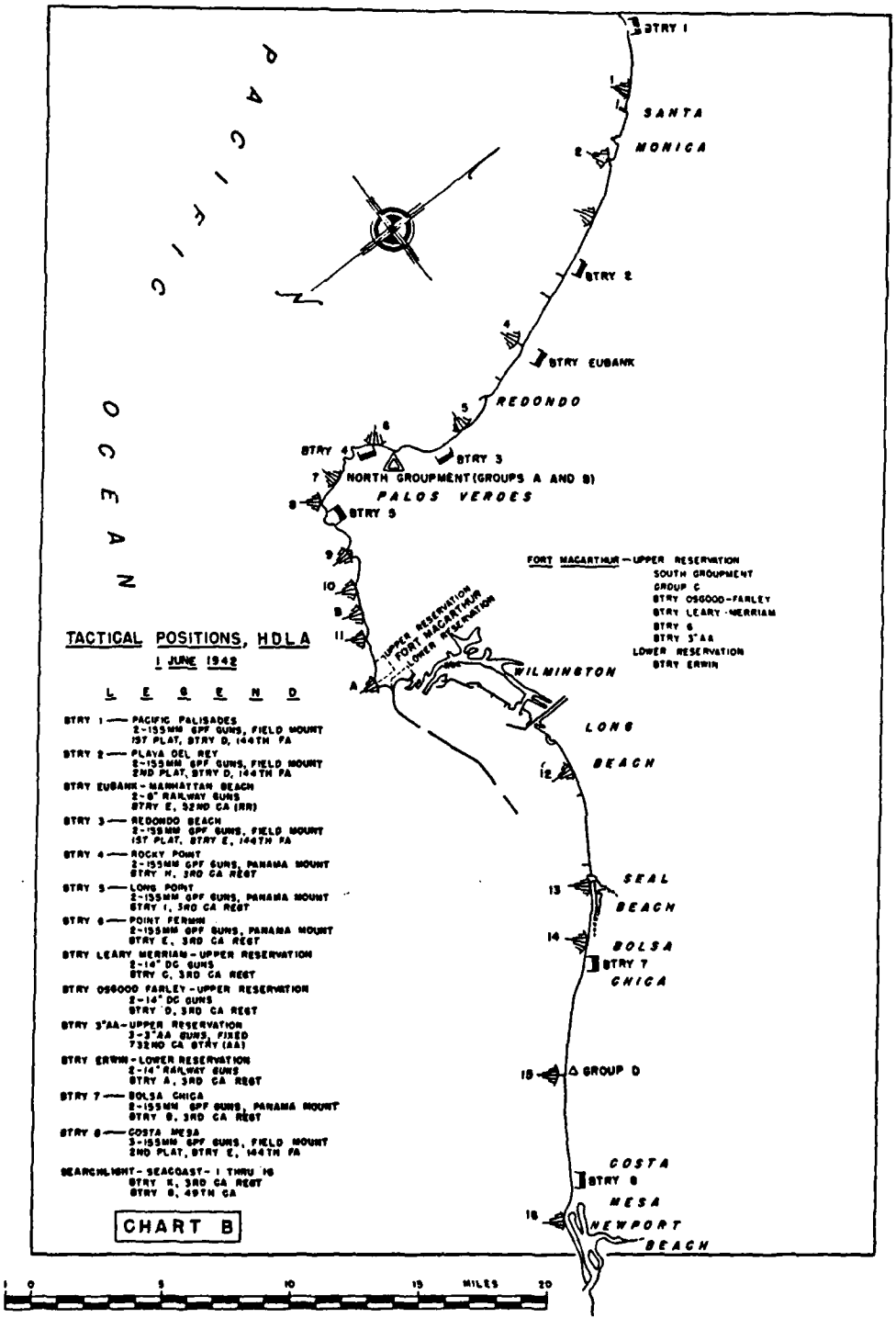

Figure 3.4. Harbor defenses of the Los Angeles region in 1942 (after Monnett et al. 1945:13).

Bolsa Chica State Beach

Small resort communities were established along the Bolsa Chica coastline in the early 1900s. The Pacific Electric Railway had been granted a 100-foot right-of-way on the ocean side of Pacific Coast Highway, and in 1904 constructed a rail line for the big Red Cars, trolleys that connected Newport Beach and Los Angeles. Automobile traffic began to flow along the seafront when Pacific Coast Highway was officially opened in 1926. By 1960, the Bolsa Chica beach strip beyond the tracks was owned mainly by the descendants of the original Bolsa Chica Gun Club stockholders. The State of California considered the property an excellent prospective beach-park site, and began condemnation proceedings. After title was secured to the property, long known as "Tin Can Beach" on account of refuse dumping which had taken place over the years, the state began a massive cleanup, removing nearly 300 tons of debris. In 1967, lifeguard towers, sanitary facilities, and a 480-car blacktopped parking lot were placed on the site which was then renamed Bolsa Chica State Beach (Brouhard 1968).

Planning History--Post World War II

Chronology: 1964 to 1988

After World War II, Orange County experienced a rapid increase in population, and development began to impact the Bolsa Chica area. Formal governmental planning for the Bolsa Chica area began in 1964 when Congress authorized the U.S. Army Corps of Engineers to study the feasibility of a small-craft harbor at Bolsa Chica. The County and the Corps cooperated on the venture until 1972 when the California State Department of Navigation and Ocean Development assumed project sponsorship (California Coastal Commission 1984; EDAW 1979; Huntington Beach Planning Department 1986; Orange County Environmental Planning Agency 1985).

In 1970 Signal Landmark Properties, Inc. acquired title to 2000 acres of Bolsa Chica land and began conceptual development planning. At the same time the state contested title to those areas of the Bolsa Gap which comprised historic tide and submerged lands. An interagency task force, headed by the State Secretary for Resources was formed, with representatives from the State Lands Commission, Attorney General's Office, and Department of Fish and Game. The Task Force identified 526.4 acres of sovereign tide and submerged lands and set out the state's objective for these lands: the reestablishment and maintenance of a saltwater marsh ecosystem, provision for wildlife habitat, expanded recreational opportunities for Bolsa Chica State Beach, and a public waterway and small craft marina for recreational use. The task force determined that the irregular configuration and narrowness of some state lands put them outside the scope of these objectives.

An agreement known as the "1973 Boundary Settlement" provided:

(1) Fee title to a 300 acre plot and 27.5 acres beneath Pacific Coast Highway adjacent to Bolsa Chica State Beach to the state;

(2) Clear fee title by conveyance or confirmation to Signal Landmark of the remainder of its Bolsa Chica lands;

(3) Signal agreed to lease to the state without cost an additional 230 acres of land adjacent to the 300 acre plot for a period of 14 years. This land would compensate for the effect of an ocean entrance on the state's 300 acre parcel as well as being a contribution for the establishment of such a system by Signal;

(4) The state would receive fee title to the 230 acre plot upon construction of an ocean entrance system within the 14-year period, reopening Bolsa Gap to the ocean and providing public benefit as well as water access to Signal lands; and

(5) The Department of Fish and Game received 66-year leases of the lands described in (1) and (3) from the State Lands Commission for the purpose of marsh establishment. The lease of 30 acres was to terminate at the end of 14 years should an ocean entrance not be constructed. The lease has since been renewed.

The 1973 settlement agreement included a conceptual plan prepared by the Department of Fish and Game for the state lands in the study area; it was revised in 1984. Phase I, the reestablishment of a marsh encompassing approximately 150 acres of the 300-acre state parcel in addition to some 60 acres in Outer Bolsa Bay, was completed in 1978. After nearly eight decades, seawater again entered Bolsa Chica lands, restoring a portion of the damaged wetlands.

In 1979 the Amigos de Bolsa Chica, an environmental group, sued the state alleging that the 1973 land exchange agreement was a gift of public trust lands that violated the state Constitution and that Signal and others violated the state Coastal Act. In January, 1988 the Orange County Superior Court gave the Amigos the right to pursue their original suit which had been challenged under the statute of limitations.

In 1978 Orange County formed the Bolsa Chica Study Group to facilitate the development of a local coastal plan. The California Coastal Conservancy submitted planning alternatives to the County. Using nine of the alternatives presented, the County Planning Commission and Board of Supervisors formulated a Land Use Plan. The Coastal Commission rejected the plan in April of 1982 and the County withdrew it, beginning work on a supplemental plan to address Coastal Commission concerns. Using the provisions of Senate Bill 429, the Coastal Conservancy and the Department of Fish and Game prepared a Habitat Conservation Plan for the Bolsa Chica Study Area.

On November 29, 1984, the Coastal Commission, after reviewing the Habitat Conservation Plan and the resubmitted 1982 County Land Use Plan, denied the County plan as submitted but recommended certification of the Land Use Plan if changed in accordance with staff-suggested modifications. On October 23, 1985, the again-revised Land Use Plan, with the concurrence of the Department of Fish and Game and Signal Landmark, was approved by the Coastal Commission. It stipulated:

(1) 915 acres of productive and diverse wetlands and 86 acres of environmentally-sensitive habitat area; the wetlands to be buffered from urban development;

(2) a navigable ocean entrance and waterways; a 75 acre or larger marina and commercial area including boat storage, launch ramps, and visitor commercial facilities;

(3) an inward realignment of a segment of Pacific Coast Highway past the new ocean entrance, taking advantage of the Bolsa Chica Mesa elevation for navigable bridges over the main channel waterway and Huntington Harbor Connection Channel;

(4) creation of a 130 acre Linear Regional Park on the Huntington Mesa;

(5) An internal road system including the connection of Bolsa Chica Street with Garfield Avenue through a corridor in the lowland; a relocation of the Pacific Coast Highway/Warner Avenue intersection and other secondary roadways;

(6) A total of approximately 500 gross acres of medium, high, and heavy density residential development in the lowland and on the Bolsa Chica Mesa; and

(7) A provision for a navigable interior waterway system into Huntington Harbor and a Pacific Coast Highway bridge over Bolsa Bay.

Eighty-three acres of land in the Bolsa Chica Study Area belong to the Metropolitan Water District of Southern California. Although the District has designated this acreage, its Corridor and Switchyard lands, for the industrial use of seawater desalination, the County Land Use Plan requires that the Corridor land be used for a marina, and the Switchyard land be used as a restored wetland for mitigation of the destruction of wetlands in the development of the marina and residences on the Corridor land. Metropolitan Water District has registered its objections to the plan at every stage of the proceeding. There is no policy or program for the acquisition of Metropolitan's property in the Land Use Plan (Abbott 1985).

Land Use Plan--Completion

The Coastal Commission has required a two-step program for completing the Local Coastal Program. The first, the Land Use Confirmation Review, requires:

(1) completion of studies showing the feasibility of the navigable ocean entrance;

(2) preparation of a wetlands restoration concept plan;

(3) preparation of a Huntington Harbor Connection Channel plan.

The second, the Implementing Action Program, requires:

(1) preparation of planned community district zoning and regulations for the Bolsa Chica segment of the Local Coastal Program;

(2) a feature plan for the Bolsa Chica Planned Community District;

(3) one or more agreements regarding the phasing, financing, and implementation of the Bolsa Chica Land Use Plan.

The activities associated with the Land Use Plan Confirmation and the Implementing Actions Program are complex and multi-jurisdictional, and are expected to take several years of intensive work to complete.

The Bolsa Chica Area in 1988

The history of the Bolsa Chica area manifests the past and potential richness of California coastal land. Current concerns about the 1600-acre stretch of land along the Pacific Coast Highway, begun in 1964 when the Army Corps of Engineers was authorized to study the feasibility of a small craft harbor, continue a struggle for dominion over the area that dates back to the land grant era. In succession, ranchers, farmers, hunters, and oil well drillers drained the acreage, using roads, dikes, dams, and machinery, to make the area suitable for habitation and exploit its resources. The prevailing laissez-faire political and social climate of California in the late nineteenth and twentieth centuries allowed small- and large-scale farmers, oil entrepreneurs and even the squatters, "ditch farmers," and itinerant preachers of the Gospel Swamp to utilize the land at will.

Since 1964 the history of the Bolsa Chica has been the attempt to reconcile conflicting interests. To enhance land values, developers propose to key restoration and maintenance of wetlands to the construction of marinas and housing, under the premise that without development no effective attempt will be made to save the pickleweed environment. Environmentalists, maintaining that tidelands are a public trust, see both lowlands and mesas as crucially important in a state where feeding grounds and resting places for wildlife and birds grow increasingly scarce. State and federal agencies find it difficult to move quickly and intervene effectively, faced with citizen outcry and lawsuits by public interest groups. Meanwhile, developers lobby legislators to set up special districts and seek federal loans for a navigable ocean channel that surfers believe will ruin the beach for their sport. All groups are forced to agree on one fact: with the exception of the Phase I restoration of the wetlands by the State

Department of Fish and Game, not much progress has been made since 1964 in turning plans into reality.

Compatibility between marina and salt marsh is but one aspect of a characteristic American challenge: the need to balance public and private interests. Certainly, the fate of Bolsa Chica depends on the design objectives that are agreed on and implemented and the quality of agency decision-making. How the area will ultimately develop, be preserved, or restored is contingent on the goodwill and public spirit of concerned individuals, organizations, and agencies who accept responsibility for the area's future.

4:

ARCHAEOLOGICAL BACKGROUND

Jerrel H. Sorensen, Thad M. Van Bueren,
and Michael J. Moratto

Regional Prehistory

While many alleged Early Man sites have been reported in California, compelling evidence of human occupance in the area is restricted to the past 12,000 years. Various finds claimed to evince earlier occupation either have proven to be of Holocene age (post-10,000 B.P.), or remain equivocal. Human skeletal remains from southern California once argued to be of Pleistocene age have been dated to the Holocene epoch, based on accelerator mass spectrometry radiocarbon assays (Taylor et al. 1985). Other "evidence" of Pleistocene cultural activity in California include dubious "artifacts" and "archaeological" features. These discoveries are summarized and reviewed critically by Moratto (1984:30-73). Convincing evidence exists for human occupation in California beginning ca. 12,000 B.P. From that time forward, continuous use of area has been documented through numerous archaeological investigations.

Two well known chronological schemes for coastal southern California are based on the concepts of "horizon" (Wallace 1955, 1978) and "tradition" (Warren 1968). As defined by Willey and Phillips (1953), "horizon" refers to geographically widespread but temporally restricted cultural manifestations, while "tradition" refers to the persistence of major cultural patterns through long periods of time. No one has yet developed for the study area a detailed chronology like the one worked out by C. D. King (1981) for the Santa Barbara Channel. The chronologies of Wallace and Warren reflect different interpretations of cultural developments in coastal southern California. At issue is whether technologic shifts represent developments in situ, diffusion of traits, and/or population replacements. Given the notable conservatism indicated in the region's sites by the retention of many traits long after the adoption of new ones, fundamental cultural continuity and stability may have been more characteristic than the horizon model would imply. To simplify discussion of their chronological frameworks, the two schemes are compared, by time period, below.

12,000 to 8000 B.P.

This period incorporates Wallace's "Horizon I: Early Man" (1955) and "Period I: Hunting" (1978), and Warren's (1968) "San Dieguito Tradition." Cultural materials consist mostly of flaked stone tools such as projectile points, knives, and scrapers, which are associated primarily with hunting activities, as well as occasional millingstones. Human remains are rare or absent at sites assigned to this period. Wallace and Warren characterize this as a period when cultures in southern California were adapting to the rapidly changing post-

Pleistocene environments. Population likely consisted of nomadic or semi-nomadic bands pursuing game and other resources through the seasons of the year within intimately known home territories. Along the coast, many archaeological sites dated to this period might have been inundated, covered by sediment, or destroyed as sea levels rose in early Holocene times.

8000 to 5000 B.P.

This period of climatic change was marked by economic diversification as peoples adapted increasingly to local environmental conditions throughout southern California. New technologies and patterns of settlement developed in response to warming and drying climatic trends. Warren (1968) refers to the new economic emphasis as the "Encinitas Tradition," while Wallace labels it the "Millingstone Horizon" (1955) or "Period II: Food Collecting" (1978). Various Millingstone complexes--La Jolla, Oak Grove, and Topanga--are encompassed by these terms. Artifacts of 8000-5000 B.P. are characterized by relatively few projectile points, abundant millingstones and manos, various chopping, scraping, and cutting tools, some shell ornaments, and cogged and discoidal stones. In the project vicinity secondary inhumations are common, while loosely flexed and extended burials occur in the Santa Barbara area and tightly flexed burials are found in the San Diego area. Various hypotheses account for the evident shift from a hunting to a gathering emphasis: (1) local development, in response to environmental change, from the preceding hunting traditions; (2) an influx of a new population, with subsistence focused on plant food processing; or (3) diffusion of the new economic focus to older, resident populations on the coast.

Despite the apparent similarity of groundstone assemblages at all Millingstone or Encinitas sites, important variations among them are discernible. For instance, coastal sites tend to be larger, more complex, and more permanently occupied than are interior sites, perhaps because of abundant, easily procured, and reliable resources of the coastal zone. The diversity of such artifacts as beads, pendants, charmstones, cogged stones, and discoidals also bespeak intra- and inter-regional variability. Such artifacts may have functioned variously as simple ornaments, emblems of identity, symbols associated with ideology, ceremonial objects, or gamestones.

Concepts such as the Millingstone Horizon and Encinitas Tradition ascribe uniformity to a geographically widespread and enduring use of millingslabs and manos. The technology suggested by these types of artifacts is neither complex nor exclusively associated with a single prehistoric culture or period. Significant regional and temporal variation among sites which have been assigned to the 8000-5000 B.P. period has been largely overlooked (see Goldberg and Arnold 1987).

5000 to 1500 B.P.

The reconstructions of Wallace (1955, 1978) and Warren (1968) differ significantly for the 5000-1500 B.P. period. Warren identifies the "Campbell Tradition" in the Santa Barbara area, while the Encinitas

Tradition continued until about A.D. 700 elsewhere in coastal southern California. The Campbell Tradition witnessed a renewed emphasis on hunting and the addition of acorn processing. Wallace views the change to acorn processing and greater emphasis on hunting as widespread throughout the region, and defines this new configuration as "Horizon III: Intermediate" (1955) or "Period III: Diversified Subsistence" (1978).

The Intermediate Horizon is characterized by basket-hopper mortars and pestles and corresponding reduction in the use of millingslabs and manos. As compared with earlier cultural expressions, there is a greater diversity of flaked stone assemblages, increased frequencies of projectile points, inferred greater dependence on acorns than in previous times, and greater reliance on shellfish collecting and sea mammal hunting in coastal areas (Wallace 1955). Cultures became increasingly diversified, and economic specialization began to develop.

Warren's contention that such changes did not reach areas south of the Santa Barbara until ca. 1200 B.P. must now be revised in light of evidence reported from Orange County. Koerper (1981) showed that the maritime emphasis noted by Warren for the Campbell Tradition also occurs at Encinitas Tradition sites in coastal Orange County. At issue is the chronology and nature of the replacement of ancestral Hokan groups in coastal areas south of Santa Barbara by populations speaking languages of the Takic subfamily of Uto-Aztecan. Since the newcomers quickly adopted the technology and economic practices of the indigenous cultures, evidence for ethnically distinctive traits or a sharp break in the archaeological record have been difficult to identify and continue to be the subject of debate (see Moratto 1984:Ch.11). Available evidence suggests that the Takic incursion occurred progressively through what are now Los Angeles and Orange counties over a lengthy period. In the project vicinity, this population intrusion is thought to be represented by the Irvine Complex which first appeared ca. 1400 B.P. (Ross 1969).

Post 1500 B.P.

The prehistoric period ended ca. A.D. 1769 when European explorers and missionaries first established permanent residence in southern California. Archaeological manifestations younger than 500 years often can be related to known ethnic groups. Archaeological sites yield diverse artifact assemblages, notably ornaments made of stone, bone, and especially shell. There are also abundant bone tools, the utilization of ceramic vessels, and containers and other artifacts carved of steatite, an important exchange material. Another natural resource, asphaltum, was utilized as waterproofing for boats, baskets, and bottles and as an adhesive for mounting projectile points, setting shell decorations, and repairing broken items. Probably the most important technological innovation of the period in terms of hunting behavior was the bow and arrow. This weapon is identified archaeologically by varied, small projectile points. Wallace (1955) identifies these manifestations as "Horizon IV: Late Prehistoric," while Warren (1968) defines such developments in the project vicinity as the "Shoshonean Tradition," reflecting the Takic incursion.

The size and number of sites ascribed to this period suggest a population increase over that of preceding intervals. There is also an apparent concomitant increase in social, economic, and political complexity. Craft specialization is evinced, as is the use of shell beads as a standard of exchange (Arnold 1987). In addition to very extensive exchange relationships, grave associations provide evidence of differential wealth, which suggests social ranking (King 1982).

Probably the most interesting aspect of local archaeology during this period is its relationship to historically known Native American groups. In the Santa Barbara area, Warren (1968) defines the Chumash Tradition, which evidently developed out of the diversified subsistence of the Campbell Tradition. Farther south, in what is now San Diego County, the continuity of the archaeological record suggests that the historic Diegueno (speakers of a Hokan language) derived from the Yuman Tradition which Warren defines for the post-1500 B.P. period in that region. In the central South Coast, which now includes Orange County, the late prehistoric sequence may be more complex. On linguistic grounds, Kroeber (1925) inferred a migration of Takic peoples from the Great Basin and eastern California desert areas into western and southern California around 1500 B.P., triggered by a significant "deterioration" of their home environments. This hypothesized Takic intrusion was thought to have driven a wedge through the coastal Hokan groups, separating the Chumash on the north from the Diegueño on the south. This intrusion, identified archaeologically as the "Shoshonean Tradition" (Warren 1968), is associated with the distribution of arrow points. The "Shoshoneans" became known historically as the Gabrielino, Luiseño, and Juaneño. The nature, extent, and even existence of this Shoshonean wedge has been debated for the last sixty years. A recent attempt to isolate the initial Shoshonean presence in Orange County (at the Newport Beach site of CA-ORA-119a) failed to identify any disruption or displacement of the coastal population over the past two thousand years (Koerper 1979). The place of the Shoshonean intrusion in southern California prehistory is discussed further by Goldberg and Arnold (1987).

Bolsa Chica Prehistory

Archaeological research in the project area has been conducted over many decades (Table 4.1). Studies have included background research, surveys, and subsurface sampling by excavation. This previous research is summarized below; the status of the archaeological record is then examined in the concluding section of this chapter. To conform with extant reports on the project area, Wallace's (1955, 1978) chronological framework is used throughout the following discussion. The radiocarbon dates mentioned in this section are derived from marine shell and have not been corrected.

Archaeological work in coastal Orange County dates back to the 1920s when Herman F. Strandt surveyed extensively. Unfortunately, most of Strandt's records and notes have been lost or destroyed over the years. However, a map of the sites he recorded in Orange County has survived. Six of Strandt's sites are located within the present study

area: Sites 105, 7, 6, and 9/11/12 (CA-ORA-82, -83/86, -85, and -88 or -365, respectively).

During 1960 and 1961 two Orange County archaeologists, Alika Herring and Robert Gochicoa, systematically surveyed the southern portion of Bolsa Chica Mesa. Herring and Gochicoa investigated relationships among sites on the mesa and salvaged information from the "Cogged Stone Site" (CA-ORA-83/86) which was already suffering impacts from agriculture and relic hunters. A total of six shell midden sites (A-F) was identified during this survey. These sites are now recorded as:

Site A,E	CA-ORA-83/86	(the Cogged Stone Site)
Site B	CA-ORA-84	
Site C	CA-ORA-78	
Site D	CA-ORA-85	
Site F	CA-ORA-87	

One of Herring and Gochicoa's goals was to salvage information from CA-ORA-83/86. This was achieved with intensive surface collection and the excavation of a 3x3-ft unit dug to a depth of 16 in. A total of 137 cogged stones, 39 discoidals, and 13 charmstones, as well as milling slabs, manos, pestles, and projectile points were recovered. These artifacts suggest that the site was occupied during the Millingstone and Intermediate horizons (Herring 1968).

Additional archaeological surveys on the Bolsa Chica Mesa were performed in 1963 by Ailein McKinney and in 1964 by Hal Eberhart and Keith Dixon (Cottrell 1980). Eberhart and Dixon worked in conjunction with the Pacific Coast Archaeological Society (PCAS) to prepare for excavations by California State College-Los Angeles (CSCLA) in 1964. The CSCLA field class excavated nine 5x5-ft units and twelve 2.5x5-ft units at CA-ORA-85. These units revealed sterile sand at depths between 16 and 24 inches. Two ^{14}C samples from these excavations yielded a date of greater than 3650 B.P. from the 6-12 inch zone, and a date of 4180±70 B.P. from the 12 to 18 inch zone (Cottrell and Rice 1975:12). While these dates suggest a Millingstone Horizon occupation, other artifacts including projectile point types indicate Intermediate Horizon use as well (Marshall and Eberhart 1982).

The CSCLA archaeological field class, directed by Eberhart, returned to Bolsa Chica Mesa in the spring of 1966 and excavated a portion of CA-ORA-86 (now considered to be the northeast extension of CA-ORA-83). This site proved to be badly disturbed by agricultural activity which had introduced a large amount of peat into the shell midden. In 1968 Dr. Eberhart's field class returned to the area. Much of the site surface was collected, and twelve 5x5-ft units were placed on CA-ORA-83 (Marshall and Eberhart 1982).

Interest also was focused on CA-ORA-82, which underwent repeated testing from 1966 through the early 1970s by archaeologists from the PCAS and California State College, Long Beach (CSCLB) (Weide 1967). The many artifacts recovered from the site suggest occupation during the

Table 4.1: History of Bolsa Chica Bay Archaeology

Date	Agent	Nature of Archaeological Investigation
1986	SRS	Test Excavations at CA-ORA-78, 84, and 85.
1984	SRS	Surface Collections, Augering, Excavations, and Trenching of CA-ORA-83/86.
1983	SRS	Test Excavations at CA-ORA-294 and 365.
1982	SRS	Re-evaluation of CA-ORA-83/86.
1981	SRS	Evaluation of CA-ORA-83/86 for Nomination to the National Register of Historic Places.
1976	SAC	Salvage Excavations at CA-ORA-82.
1975	ARI	Overview of Bolsa Chica Archaeology; Surface Collection, Augering, and Excavation at CA-ORA-83/86.
1974	ARI	Test Excavations at CA-ORA-78.
1973	ARI	Test Excavations and Trenching at CA-ORA-83/86 and 288.
1972	ARI	Cultural Resource Survey for City of Huntington Beach.
1971	ARI	Surface Collections and Test Excavations at CA-Ora-83/86, 84, 290, and 291.
	CSCLB	Test Excavations at CA-ORA-291.
1970	ARI	Survey of Bolsa Chica Bay Area.
1968	CSCLA	Test Excavations at CA-ORA-83/86.
1966	CSCLA	Test Excavations at CA-ORA-86.
	CSCLB, PCAS	Test Excavations at CA-ORA-82
1964	CSCLA, PCAS	Survey of the Bolsa Chica Mesa, Test Excavations at CA-ORA-85.
1961	PCAS	Surface Collection and Test Excavations at CA-ORA-83/86.

Table 4.1 (continued)

Date	Agent	Nature of Archaeological Investigation
1920s	Strandt	Survey of Orange County and Surrounding Region.

Key

ARI, Archaeological Research, Inc.; CSCLA, California State College, Los Angeles; CSCLB, California State College, Long Beach; PCAS, Pacific Coast Archaeological Society; SAC, Santa Ana College; SRS, Scientific Resource Surveys, Inc.

Millingstone and Intermediate horizons. A single ^{14}C date of 4340±200 B.P. was obtained for the site (Schroth 1983). Excavations at this site remain largely unreported.

A new period of archaeological research began in the project area in 1970. Prompted by increasing legal attention to cultural resources, studies by private corporations increasingly replaced the research projects of archaeological societies and academic institutions. In 1970 a comprehensive archaeological survey of most of the area encompassed by this study was conducted by Archaeological Research, Inc. (ARI). Previously identified sites were rerecorded and seven previously unidentified sites also were documented (CA-ORA-288 through -294) (Ross and Desautels 1970). CA-ORA-86 was recognized as an extension of CA-ORA-83 and rerecorded as a single site.

ARI continued archaeological studies on Bolsa Chica Mesa through the fall of 1970 and winter of 1971. CA-ORA-84 was investigated by means of surface collections and a series of 28 backhoe trenches. The trenches were used to determine the depth and extent of undisturbed midden. Also, a 2x2-m excavation unit was placed in the southwest corner of the site where the thickest midden was preserved (Cottrell 1980:14). Artifacts recovered from this work suggested a Millingstone Horizon occupation. Following these investigations, most of the site was removed for use as fill (ARI 1971). The southwestern portion of CA-ORA-83/86 was also scheduled for removal as fill in 1971. Before the removal of this portion of CA-ORA-83/86, ARI examined the site by surface collections, six 1x1-m, three 2.5x2.5-m, and one 5x5-m manual excavation units, and five 2-ft wide backhoe trenches (Munoz 1975).

Test excavations also were conducted by ARI in 1970-1971 at Sites CA-ORA-290 and CA-ORA-291 on Huntington Beach Mesa. Investigation at CA-ORA-290 included excavation of a 2x2x2.5-m unit which exposed a lens of shell. Ahlering and others (1971) reported that the site had already been destroyed by the construction of a paved road to the adjacent oil field. Investigations at CA-ORA-291 were more extensive. ARI, in

cooperation with CSCLB's archaeological field class directed by Margaret Weide, divided the site into two parts: CA-ORA-291A (the portion covering the slope); and -291B (the portion on the mesa top). At CA-ORA-291A a series of backhoe trenches, auger holes, and test units was employed to identify the site limits. A 20x20-m block was staked out in the area of most concentrated shell midden. A total of 42 1.25x1.25-m units was excavated in this block, which represents approximately 14 percent of the total site area (Ahlering et al. 1971:11). These excavations revealed midden as deep as 1.4 m which contained numerous artifacts marking occupations from Millingstone through Late Prehistoric horizons. Abundant faunal remains and at least two features also were documented. An additional 15 test units were excavated at CA-ORA-291B, yielding Millingstone Horizon specimens (Ahlering et al. 1971).

The City of Huntington Beach retained ARI to perform a comprehensive survey of the Bolsa Chica Bay area in 1972. Two previously unrecorded shell midden sites (CA-ORA-365 and -366) were identified on the western edge of Huntington Beach Mesa. At the time of the survey both of these sites had been damaged by development of the surrounding oil field (ARI 1973).

Throughout the early 1970s the PCAS continued limited excavations on the portion of CA-ORA-82 west of Edwards Street. While reports on those excavations are not yet available, numerous artifacts and at least six burials were encountered (Muñoz 1975). During the winter of 1975-1976 an archaeological field class from Santa Ana College, directed by Michael Lind, salvaged two additional burials which had been discovered during construction of a bicycle path on the eastern side of Edwards Street (Cottrell 1980).

ARI initiated further work on Bolsa Chica Mesa in 1973. The northeast portion of CA-ORA-83/86 (previously recorded as CA-ORA-86) was surface-collected, eight 1.5x1.5-m excavation units were excavated by hand, and ten 3-ft wide backhoe trenches were placed across the site (Cooley 1973). A second site, CA-ORA-288, was explored with a series of nine trenches prior to the removal of this site for fill. Recovered artifacts indicate a Millingstone Horizon occupation (Cottrell 1980).

In 1974, ARI sampled the prehistoric component at CA-ORA-78 with eight 1.5x1.5-m units (Nissley et al. 1975). Some controversy exists over whether the shell observed on the site is natural or of historic or prehistoric cultural origin (Cottrell and Rice 1975; Mason 1987).

ARI continued work at CA-ORA-83/86 through 1974 and 1975. Controlled surface collections in 20x20-m areas, 85 auger borings, soil chemical studies, and a magnetometer survey were performed. Analysis of artifacts confirmed that the site had been occupied during the Millingstone and Intermediate horizons (Butzbach 1975; Carter and Howard 1975).

Since 1975 the archaeological resources of the Bolsa Chica Mesa, particularly CA-ORA-83/86, have undergone intensive evaluation; also, several small surveys were conducted within or adjacent to this project. In 1983, survey of a 42.4-acre tract scheduled for development in the lowlands below and southeast of Bolsa Chica Mesa disclosed no cultural

resources (Brock and Sawyer 1983). A 21-acre parcel adjacent to the project area and just 100 m south of CA-ORA-291 also was surveyed with negative results in 1980 by Archaeological Associates, Ltd. (Van Horn 1980).

In addition to these small surveys, known and potential cultural resources on the Outer Continental Shelf (OCS) were identified for the Minerals Management Service of the United States Department of the Interior using geomorphologic, archaeological, and historic data. The first segment of this study, including the OCS from Morro Bay in San Luis Obispo County to the Mexican border, was completed by PS Associates in 1987. The ocean bottom southwest of the Bolsa Chica Gap was identified as a sensitive area likely to contain submerged archaeological sites (Pierson et al. 1987).

During the early 1980s Scientific Resource Surveys, Inc. (SRS) conducted several investigations of CA-ORA-83/86. A review of previous research and analysis of maps, archives and aerial photos proceeded in order to determine the significance, status, and eligibility of CA-ORA-83/86 for nomination to the National Register of Historic Places (Cottrell and Rice 1975; SRS 1981, 1982). In 1984 SRS continued its archaeological work at CA-ORA-83/86. Included were three controlled-surface collections within the grid established in 1975, a geophysical remote sensing survey, reference sections, profiles, and column samples, two phases of augering for a total of 168 holes, 409 meters of backhoe trenches, and sixteen 1x2-m test excavation units. Analyses of recovered materials include a series of 33 radiocarbon dates which cluster between 7600 and 3300 B.P. This indicates the site was occupied primarily during the Millingstone Horizon. A single date of 2335±55 B.P. is said to mark Intermediate Horizon occupation (Whitney-Desautels et al. 1986).

SRS also conducted several small testing/monitoring projects between 1983 and 1986 in connection with a geological investigation of the project area. At CA-ORA-78 excavation of geological trenches was monitored and column samples were collected. The prehistoric deposit was recognized, but it was considered very disturbed and yielded little cultural material (McKenna 1986b). Site CA-ORA-85 on Bolsa Chica Mesa was examined also, with ten 1x2-m units placed along the path of the proposed trench. Recovery of a late prehistoric projectile point from the midden base suggested to the excavators that the deposits were mixed. Three ^{14}C dates ranging from 3380 to 3520 B.P. are consistent with a Millingstone Horizon ascription (McKenna and Mason 1987; Mason 1987).

Two archaeological sites on Huntington Beach Mesa also were affected by geological work. Site CA-ORA-294 was tested with a single 1x1-m unit to a depth of 30 cm near the site boundary. The excavation of a geological trench in the site vicinity was monitored. A buried cultural deposit was observed in the wall of a gully south of the most dense portion of the shell midden. A single ^{14}C date of 2150±35 B.P. was obtained from a sample of shell from the vicinity of this site (SRS 1985:57-59). More extensive geological trenching took place on and around CA-ORA-365. As part of its monitoring, SRS collected 23

artifacts from the surface of this site. Two 1x1-m and two 1x2-m units were excavated to a maximum depth of 90 cm. Five artifacts--an obsidian flake, mano, hammerstone, millingstone fragment, and scraper--were recovered from these units. Monitoring of the geological trenching and cut slopes led to the recovery of 34 historic artifacts and the identification of shell midden. Prehistoric deposits were observed in two of the trenches and in the cut slope of an adjacent borrow pit, while historic materials were widespread and observed in all but one excavation. Three ^{14}C dates of 4365±50 B.P., 4101±60 B.P., and 2900±40 B.P. suggest that CA-ORA-365 was occupied during both the Millingstone and Intermediate horizons (SRS 1985:38-43).

In 1986 SRS salvaged remnants of CA-ORA-84. Seven 1x0.5-m units were excavated on the slope remnant and three 1x1-m units were placed around a power pole that had been pedestalled by the removal of 3 m of surrounding soil. Five ^{14}C dates of 4700-4120 B.P. are consistent with a Millingstone Horizon identification (McKenna 1986a).

Summary and Conclusions

Six decades of archaeological work in the Bolsa Chica Bay area has documented numerous shell middens. It is most unlikely that any prehistoric sites with surface deposits remain to be discovered on the Bolsa Chica Mesa or Huntington Beach Mesa. Many of the sites in this locality have been investigated through surface collection, manual excavation, augering, mechanical trenching, or a combination of these procedures. The largest of these sites, CA-ORA-82 and CA-ORA-83/86, have been studied repeatedly. One product of this work has been, through the analysis of artifacts and the dating of ^{14}C samples, the placement of certain Bolsa Chica components into local chronologic schemes (Table 4.2). Given the limited samples and chronometric data from many project sites, however, it is possible that additional unrecognized components may exist.

Despite the value of past work, archaeological knowledge of the project area suffers from several important deficiencies. First, historic archaeological sites have been largely ignored to date. While some of their locations are known, formal recording and evaluation have awaited the present study. Second, investigations at prehistoric sites in the area have been conducted on a piecemeal basis; they have not been directed by a unified research design for the study locality. As a result, relationships among project sites and between those sites and their environment through time have not been examined systematically. This problem is compounded by the poor quality of some excavation reports, which precludes meaningful comparisons. For instance, some reports lack either maps showing the locations of tests or basic contextual/provenience information about cultural materials and radiocarbon dates. Third, sampling at some project prehistoric sites has not provided the basic information needed to assess their significance (and hence, NRHP eligibility), due to inadequate samples, poorly designed and/or reported investigations, and some unreported excavations; other sites have never been examined subsurficially to determine their data potentials and integrity.

Table 4.2: Summary of Radiocarbon Dates* and Site Occupational History

Sites	^{14}C Dates n	range	History of Occupation
CA-ORA- 78	0	-	Unknown Prehistoric
CA-ORA- 82	1	4340 B.P.	MSH, IH
CA-ORA- 83/86	33	7600-2335 B.P.	MSH, IH
CA-ORA- 84	5	4700-4120 B.P.	MSH
CA-ORA- 85	5	4180-3500 B.P.	MSH, IH, LPH
CA-ORA- 88	0	-	MSH (?)
CA-ORA-288	0	-	MSH
CA-ORA-289	0	-	Unknown Prehistoric
CA-ORA-290	0	-	Unknown Prehistoric
CA-ORA-291	0	-	MSH, IH, LPH
CA-ORA-292	0	-	Unknown Prehistoric
CA-ORA-293	0	-	MSH (?)
CA-ORA-294	1	2150 B.P.	IH (?)
CA-ORA-365	3	4365-2900 B.P.	MSH, IH
CA-ORA-366	0	-	MSH (?)

MSH: Millingstone Horizon
IH : Intermediate Horizon
LPH: Late Prehistoric Horizon
(after Wallace 1955)
* All Radiocarbon Dates are uncorrected.

As a result of these gaps in the archaeological record, certain sites will require additional work before their NRHP eligibility can be assessed. Moreover, further work is needed to identify and document historic sites outside of areas surveyed during this study. Any such future studies in the project area should be designed to examine regional research issues, such as those proposed by Mason (1987), in

order to maximize the value of recovered data for advancing knowledge. Specific recommendations are provided in Chapter 7.

5:

FIELD INVESTIGATION

This chapter describes IRI's field studies, which were designed to examine and redocument known archaeological sites, and to determine if additional fieldwork was warranted (LACoE 1988). The discussion of field procedures is followed, first, by a summary of findings and a discussion of data limitations. The redocumented cultural resources are described, and their eligibility for the National Register of Historic Places is evaluated, in Chapter 6. Site records and a site location map are presented in a separate data compendium.

Field Methods

IRI's field work was conducted in areas of the Bolsa Chica and Huntington Beach mesas where archaeological sites were previously documented. The purpose was to reinspect all known cultural sites and update the site records on California Department of Parks and Recreation (CDPR) site forms. Field studies also were designed to evaluate whether additional survey or resurvey might be needed. Field work was performed between August 8 and 12 and September 20 and 21, 1988. Procedures followed during this work are described below.

Field conditions included many surficial land modifications, some areas with extensive alterations, and other areas covered with exotic plants, especially groves of eucalyptus. Ground visibility was generally fair to good. Most of Bolsa Chica Mesa is covered by agricultural fields, although some oil extraction equipment, roads, the Woodman Pole Company lot, and various World War II coastal defense features are also present. This contrasts with Huntington Beach Mesa, where oil extraction and processing facilities, roads, and pipelines cover much of the surveyed areas. The southwestern portion of Huntington Beach Mesa within the project area remains relatively undisturbed, but is heavily covered with iceplant and grasses, thus restricting ground visibility.

All areas where archaeological remains had been reported previously were surveyed intensively by a two-person team, with transects spaced 15 m or closer. This survey coverage is depicted in Figure 5.1. Ground visibility was generally good to excellent, although land modifications and natural colluviation have altered, removed, or obscured original land surfaces and may have buried portions of some archaeological sites. The surveyors examined all bare ground, cut banks, and other exposures likely to reveal evidence of cultural activities. Such evidence in coastal southern California typically includes soil color changes, unusual topography or vegetation patterns, exotic lithic materials, mollusk shells, rock alignments, artifact scatters, and/or exotic plantings. Once cultural materials were identified, the area surrounding the find(s) was systematically examined to establish the surface extent of the archaeological site or isolate.

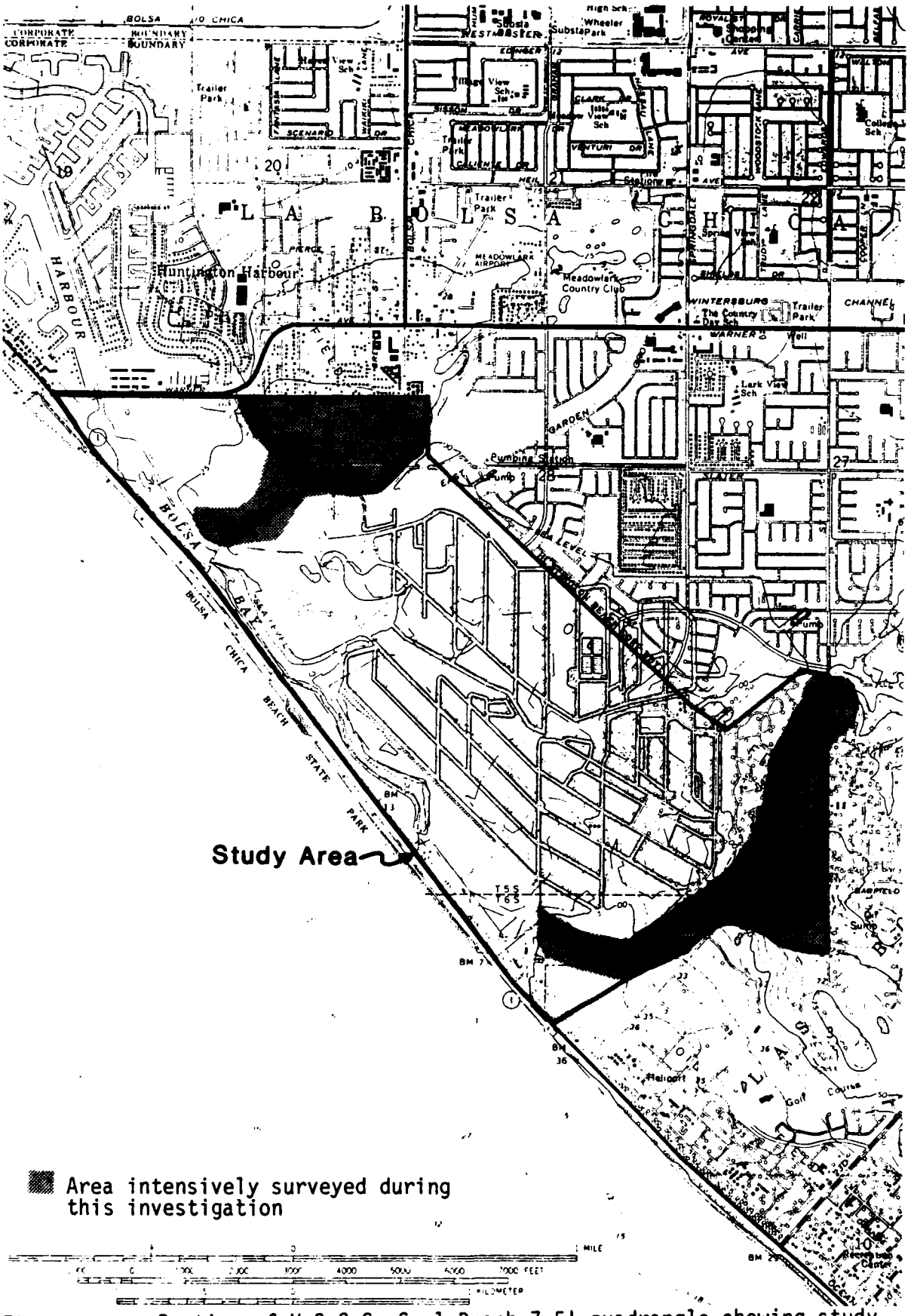

Figure 5.1. Portion of U.S.G.S. Seal Beach 7.5' quadrangle showing study area and portions of it intensively surveyed during this investigation.

Defining site limits based on surface indications is at best a very complex and difficult task. Not all material residues are readily discernible, and, generally, only the most recurrent and durable aspects of human behavior are detectable (cf. Ebert 1985; Schiffer 1972, 1976). The problem of the visibility of past human activities becomes even more acute with greater antiquity since decomposition of archaeological remains, colluviation, erosion, and other factors can conceal or destroy the material evidence. Complicating the issue is another concern, namely, how to classify and delimit the identified archaeological remains. Any definition of a cultural site is necessarily arbitrary, since the importance of particular attributes can be evaluated only with reference to defined questions or objectives. Therefore, what is important in defining sites is the explicitness of the criteria used.

In this study, "site" refers to a place with more than five flakes, three formed tools, 100 ecofacts (e.g., shell or bone in a definitely cultural context), or some combination of such materials in a 100 m^2 area; loci with fewer remains are considered isolated finds. Marine shellfish remains were the most common cultural material observed at all project archaeological sites, and for that reason they were often used as the sole basis for defining site boundaries. In areas where artifacts and features were absent, site boundaries were arbitrarily drawn where the density of shell fell to less than one piece per square meter.

Previous site designations were retained for all cultural resources documented during this study. Cultural resources located more than 100 m apart kept their separate designations, while "separate" sites in closer proximity were rerecorded as single sites with compound designations (e.g., CA-ORA-83/86). Sites with both prehistoric and historic non-Indian components at a single location also were treated as a single, albeit multicomponent, site.

All cultural sites were plotted on the U.S.G.S. Seal Beach 7.5' quadrangle, and recorded on CDPR forms. Sites were described in detail, mapped to scale using a hand-held Brunton pocket transit and tape measure or pacing, and photographed with black and white and color slide film following CDPR procedures (1986). Descriptions included general information about the site and its physical and biotic setting, the number, types, and distribution of cultural materials, features, and ecofacts, impacts, relationships to other nearby sites, and other interpretations and management information. In addition, all rare or temporally sensitive artifacts and at least a sample of the more complete or better preserved examples of other formed tools found at project sites were drawn and/or photographed.

No sites were excavated during this study. One artifact--a complete cogged stone (Figure 6.6) found at Site CA-ORA-365--was collected with the approval of the Los Angeles District, U.S. Army Corps of Engineers. That artifact will be curated at the Archaeological Laboratory at California State University, Fullerton.

Survey Results

During field work for this project 17 previously recorded sites were systematically reinspected. Two of these known sites (CA-ORA-288) and -290) appear to have been destroyed completely, while the remainder were rerecorded as 12 individual cultural sites. Of the latter, three (CA-ORA-83/86/144, -84/289, and -293/294) consist of formerly separately recorded entities that due to their close proximity and often fairly continuous scatter of cultural materials have been redocumented as single, larger sites. Three historic sites or components were identified and documented as portions of previously recorded sites (CA-ORA-78, -88, and -365). While not yet over 50 years old, the World War II fortifications on Bolsa Chica Mesa, found at or adjacent to CA-ORA-78, -83/86/144, and -85, represent another cultural complex that should be documented as appropriate (see Chapter 7). This field study in previously surveyed areas on the Bolsa Chica and Huntington Beach mesas indicates that, while prehistoric remains have likely all been identified in those portions of the project area, historic non-Indian cultural sites have been overlooked. This issue is addressed further in Chapter 7. The following chapter describes each of the cultural sites redocumented during this study.

Data Limitations

Because this field study was limited to surface reconnaissance, the potential for buried portions of the known archaeological sites could not be evaluated. At one site, CA-ORA-293/294, a buried cultural deposit was observed in an erosion-cut bank, and other such instances could be present due to substantial land modifications in the project area. Ground visibility varied from excellent to poor, with heavy grass cover limiting visibility in portions of the surveyed areas. This constrained the delineation of some site boundaries, as noted on several of IRI's site records (see Data Compendium). These data limitations are considered in greater detail in Chapter 7.

6:

CULTURAL RESOURCES INVENTORY AND EVALUATION

Thad M. Van Bueren, Susan K. Goldberg,
and Michael J. Moratto

This chapter provides summary descriptions of known cultural resources in the Bolsa Chica project area and evaluates their eligibility for the National Register of Historic Places (NRHP). A total of 12 archaeological sites, some including two or more loci formerly designated separately, was recorded during this study; two other previously documented sites in the project area apparently have been destroyed entirely. Of the extant cultural resources, all have one or more prehistoric components; three also register historic non-Indian activities.

The chapter first sets forth the criteria by which significance is assessed, followed by descriptions of the individual sites, their integrity, and their significant values. Previous archaeological findings at some of the sites are reviewed to clarify data potentials. Complete Archaeological Site Records and site location maps are presented in the Data Compendium.

The NRHP is emphasized in the following discussion because, by law, cultural resources included in, or eligible for, the Register must be preserved or otherwise managed in prescribed ways whenever those resources are affected by a Federal undertaking. Cultural remains inadmissible to the NRHP usually do not warrant management consideration (King et al. 1977), unless they possess some other quality whereby they would be considered under the National Environmental Policy Act.

A point worth emphasizing at the outset is that significance--particularly if it is taken to mean NRHP eligibility--is not being determined in this chapter. Only the State Historic Preservation Officer and the agency official may determine that a property is or is not significant. The present task is to evaluate significance--to render a professional opinion rather than a legal finding. Further, as discussed below, in a few cases final significance evaluation will require additional study to assess integrity and determine the nature of subsurface deposits and constituents.

Significance Criteria

The significance of the cultural resources addressed in this study hinges on their eligibility for the NRHP, as defined in 36 CFR 60.4:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design,

> setting, materials, workmanship, feeling, and association and:
>
> (a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) That are associated with the lives of persons significant in our past; or
>
> (c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) That have yielded, or may be likely to yield, information important in prehistory or history.

Significance takes many forms, and may have historical, scientific (research), ethnic, public, legal, and monetary aspects (Moratto and Kelly 1978:4-18). Of particular concern here is scientific or research significance--the potential for using cultural resources to establish reliable facts and generalizations about the past. Archaeological resources are significant and eligible for the NRHP, when they possess such information potential.

The scientific importance of individual cultural resources is best judged with reference to a broad, regional context. This is because individual sites, or even multiple sites from a single locality seldom reflect the full range of cultural patterning present in a particular region (Schiffer and Gumerman 1977). Such criteria as representativeness and specific research values are relevant aspects of a site's significance. A knowledge of site structure, content, and integrity is required to evaluate research potentials through the linkage of available classes of data with realistic research questions and domains. At historic sites, additional information regarding the availability of knowledgeable informants and archival data also may be needed to evaluate research potentials.

In preceding chapters we have provided a regional context outlining the known prehistory and history of the project area, a context that in part guides the assessment of the values and data potentials of the Bolsa Chica sites. As well, two other recent studies of regional prehistory serve as guides for evaluating the significance of the Indian sites at Bolsa Chica. Mason's (1987) research design for coastal archaeological sites in northern Orange County specifically integrates known and anticipated data from many of the sites in the current study area. His model, based in large measure on Koerper's (1981) work at two Newport Bay sites, emphasizes the need for reconstructing prehistoric subsistence-settlement systems. He advances expectations regarding the prehistoric subsistence foci that might be found in particular coastal settings and suggests methods that may effectively elucidate temporal

changes in the use of faunal resources, particularly shellfish. While Mason's model is relevant to the present study and explicit in its linkage of research questions and data requirements, its narrow focus on the coastal zone limits consideration of broader intraregional comparisons that will be required to reconstruct seasonal rounds, settlement patterns, population movements, and exchange systems.

Although not as focused on the Bolsa Chica coastal zone as Mason's (1987) research design, a context evaluation of prehistoric resources in the Prado Basin (Goldberg and Arnold 1987) provides a broad framework against which the data potentials of the Bolsa Chica sites can be assessed. Goldberg and Arnold have identified major regional research problems and information gaps, and outlined the data required for investigating numerous research questions. Because many of the archaeological questions are not locality-specific and will require data from both coastal and inland areas for resolution, the research domains framed for the Prado Basin are applicable to the Bolsa Chica study. Together, Mason's (1987) research design and Goldberg and Arnold's (1987) context evaluation serve as bases for assessing the research potentials, and thus the NRHP eligibility, of the prehistoric sites in the study area. Other research issues may be framed prior to further testing and evaluation of the Bolsa Chica sites.

The evaluation of research potentials is largely the process of systematically linking data classes with appropriate questions or hypotheses. The discovery of a housefloor or other structural remains, for instance, would signal the potential to answer questions about architecture, domestic activities, and intra-site functional patterning, with possible implications for mobility, seasonality, ethnicity, and social organization. Human burials would represent potentials for studies of demography, mortuary practices, social organization, diet, health, and biological affinity; charcoal, projectile points, or bottles would permit the study of chronology; obsidian, shell beads, and diagnostic historical materials are some of the items that would enable studies of trade or commerce.

The defined research objectives may be achieved only through the systematic acquisition and study of relevant kinds (and adequate quantities) of data. Explicit recognition of data needs and a clear understanding of the uses to which they can be put enable identification of sites and groups of sites which may contribute important information toward the resolution of research questions. In turn, comparison of potentially available data classes from specific sites against a list of data requirements enables assessment of a site's research potential and therefore serves as a measure of significance. In Table 6.1 we provide a preliminary classification of archaeological and historical data according to the research domains to which they are relevant.

Achievement of most research objectives would require a variety of data from numerous contexts. Environmental, paleoenvironmental, chronometric, subsistence, settlement-pattern, technological, ethnicity, exchange system, demographic, and ethnohistoric data must be collected and integrated. To enable an assessment of the research potentials of the sites in the Bolsa Chica project area, and thus, their significance,

Table 6.1
Archaeological Data Requirements

A. Technological Data
1. Artifact morphology
2. Reduction sequences
3. Wear patterns
4. Spatial co-associations
5. Replicative experimental data
6. Breakage patterns
7. Raw material source and use
8. Tool diversity indices
9. Engineering features
10. Architectural features

B. Subsistence Data
1. Faunal assemblages (including shellfish)
2. Floral assemblages
3. Economic pollens
4. Subsistence-related assemblages (procurement, processing, storage)
5. Subsistence-related features
6. Site catchment/market area

C. Settlement Data
1. Site size
2. Site function
3. Intrasite patterning
4. Features (especially living surfaces and processing areas)
5. Intrasite spatial distributions
6. Chronological sequences
7. Seasonality

D. Exchange Systems
1. Exotic materials (e.g., obsidian)
2. Exotic artifacts
3. Historic artifacts in aboriginal contexts
4. Intensification or specialization in production
5. Exotic subsistence items, non-local market goods

E. Ethnicity
1. Cultural markers in artifact assemblages
2. Idiosyncratic features
3. Subsistence orientations
4. Distinctive technological modes
5. Distinctive art styles
6. Distinctive ceremonial configurations
7. Osteologic/osteometric and odontometric data

Table 6.1 (continued)

F. Environmental Data
   1. Physiographic attributes (elevation, landform, etc.)
   2. Geology, lithology
   3. Climatic regimes
   4. Hydrographic patterns
   5. Botanical composition and zonation
   6. Faunal composition and zonation
   7. Community/type distribution

G. Paleoenvironmental Data
   1. Faunal assemblages (especially microfauna and shellfish)
   2. Plant macrofossils
   3. Pollen spectra
   4. Geomorphological sequences
   5. Soil structure/zonation
   6. Historical documentation of environmental changes

H. Chronometric Data
   1. Time-sensitive artifacts
   2. Stratigraphy
   3. Radiocarbon dates
   4. Obsidian hydration measurements
   5. Thermoluminescence
   6. Time-sensitive assemblages and features
   7. Ethnographic testimony
   8. Historic documentation

I. Demographic Data
   1. Site surface area
   2. Number and floor area of contemporary living surfaces
   3. Age and sex of burials
   4. Historic documentation of post-contact patterns

J. Ceremonial Practices
   1. Mortuary features and assemblages
   2. Ceremonial architecture
   3. Ideotechnic artifacts

K. Ethnohistoric Data
   1. Historic documents
   2. Oral testimony
   3. Historic artifacts and features
   4. Post-contact subsistence/settlement systems
   5. Documentation of acculturation/assimilation

Table 6.2 presents a linkage of research objectives and questions (as adapted from Goldberg and Arnold (1987) and Mason (1987)) and data classes (as outlined above).

An important consideration when evaluating a site's potential to yield significant information is the integrity of its deposits and features. During field recordation of each site in this investigation, prior impacts were noted. However, research potentials may be identified even in severely disturbed site contexts (for example, single components of previously impacted sites may provide valuable data on technology), and thus all sites require careful assessment (Talmage and Chesler 1977).

Finally, in addition to scientific significance, both Indian and historical non-Indian cultural resources may possess public and ethnic values. For instance, persons or their descendants associated with a particular site may retain strong connections with that place through memories or folklore. The importance of this aspect of significance lies not only in the strength of these associations as they contribute to broad patterns of history, but also in the valuable yet ephemeral source of information such memories represent. Indian perspectives on the significance and treatment of cultural resources in the project area are given in Appendix A. Cultural resources may also have broader public significance insofar as they can serve to educate the general populace about important aspects of national, state, and local history and prehistory.

In the following sections, we evaluate the significance of the Bolsa Chica archaeological sites in terms of the NRHP eligibility criteria. The sites are assessed in terms of their potential to provide environmental and anthropological data which might profitably be applied to relevant research topics as shown in Table 6.2. Also considered are public and ethnic values.

Descriptions and Evaluations of Bolsa Chica Archaeological Sites

Fifteen previously recorded cultural sites situated within the project area have been rerecorded during this study as 12 sites, including three (CA-ORA-83/85/144, -84/289, and -293/294) that combine formerly separate loci. In addition, two other cultural resources formerly documented in the area (CA-ORA-288 and -290) apparently have been destroyed entirely. Of the extant cultural sites, all have one or more prehistoric cultural components, while three (CA-ORA-78, -88, and -365) also register historic non-Indian activities. Summary descriptions of those resources are presented below, while selected attributes of each site and prior impacts to them are listed in Table 6.3. Those data are followed by a brief statement regarding the data potentials of each site, as a measure of their significance. Those potentials also are summarized in Table 6.4.

Table 6.2
Research Questions and Data Analysis Requirements

Research Issues / Data Analysis Requirements (by category)	Environmental Data	Paleoenvironmental Data	Chronometric Data	Subsistence Data	Settlement Patterns/Land Use	Ethnicity	Exchange Systems	Demography	Ceremonial Features	Ethnohistoric Data	Technological Data
A. Milling Technology											
Form of milling tools			+								+
Relationship of form and function	+	+		+							+
Diachronic changes	+	+	+	+							+
Raw material procurement	+		+		+		+				+
Innovation vs. borrowing	+	+	+	+	+	+	+			+	+
Non-milling functions											+
B. Flaked Stone Technology											
Dominant tool types											+
Temporal distinctiveness			+								+
External relationships			+	+	+	+	+				+
Relationship of form and function	+	+	+	+	+	+				+	+
Diachronic changes	+	+	+	+	+	+	+	+		+	+
Reduction strategies	+		+		+		+				+
Raw material procurement	+		+		+		+				+
C. Other Technologies											
Perishable tools		+		+						+	+
Pottery/basketry origins			+	+		+	+				+
Function of miscellaneous artifacts	+	+	+	+	+	+	+		+	+	+
Ethnically distinct items			+			+	+				+

Table 6.2 (continued)

Research Issues \ Data Analysis Requirements (by category)	Environmental Data	Paleoenvironmental Data	Chronometric Data	Subsistence Data	Settlement Patterns/Land Use	Ethnicity	Exchange Systems	Demography	Ceremonial Features	Ethnohistoric Data	Technological Data
D. Subsistence											
Chronological patterns in floral/faunal elements		+	+	+							
Spatial patterns in floral/faunal elements		+	+	+	+						
Ethnic dietary distinctiveness				+	+	+					
Changes in effective environments	+	+	+								
Hunting technologies				+							+
Introduction of bow and arrow			+	+	+						+
Milling vs. hunting		+	+	+	+						+
Milling tool function				+						+	+
Seasonality/scheduling	+	+	+	+	+					+	+
Seasonal catchment zones	+	+	+	+	+					+	+
Open Ocean/Protected Outer Coast/Bay/Intertidal/Marsh exploitation	+	+		+						+	+
Exotic resource exploitation		+		+			+			+	
E. Settlement Patterning											
Site types	+	+	+	+	+	+		+	+	+	+
Site functions	+	+	+	+	+	+	+	+	+	+	+
Ethnicity						+					
Ethnic territories					+	+					
Settlement system bounding			+		+	+					
Seasonal patterns	+	+	+	+	+			+		+	+
Settlement scheduling	+	+	+	+	+			+		+	+
Sociocultural units			+		+	+		+	+	+	+
Flexibility/rigidity of patterning		+	+		+					+	
Diachronic changes		+	+		+						
External influences			+		+	+	+			+	

Table 6.2 (continued)

Research Issues \ Data Analysis Requirements (by category)	Environmental Data	Paleoenvironmental Data	Chronometric Data	Subsistence Data	Settlement Patterns/Land Use	Ethnicity	Exchange Systems	Demography	Ceremonial Features	Ethnohistoric Data	Technological Data
F. Adaptation to Effective Environments											
Determinants of settlement location	+	+	+		+					+	
Biotic catchments	+	+		+	+					+	
Maximization strategies	+	+	+	+	+					+	+
Effects of social environment					+	+		+		+	
Effects of paleoenvironmental changes	+	+	+	+	+		+	+			+
Effects of siltation on settlement and exploitation	+	+	+	+	+		+	+			+
G. Exchange/External Relations											
Sources of raw materials	+		+		+		+			+	+
Diachronic change	+		+		+	+	+			+	+
Trade networks vs. *ad hoc* exchange	+				+		+			+	+
Trade mechanisms					+		+			+	+
Form of exotic material	+										+
Trade centers	+				+	+	+		+	+	+
Distribution centers	+				+	+	+		+	+	+
Exchange rates			+		+		+				+
Exploitation of Coso vs. Obsidian Butte materials			+				+				+
Export items	+						+			+	+
Nature and intensity of obsidian procurement			+		+		+			+	+
Exchange of locally available materials	+				+		+			+	+
Local craft items	+				+		+			+	+
Resource selectivity	+				+		+			+	+

Table 6.3. Selected Attributes of Bolsa Chica Archaeological Sites

Site	Components[1]	Size (m^2)	Maximum Depth (cm)	Artifacts and Features[2]	Human Remains	Ecofacts[3]	^{14}C Dates (uncorrected years B.P.)	Excavation[4]	Prior Impacts[5]	Comments	References
CA-ORA-78	H, P (LH?)	64,000	80+	A?, C/D, 8 HS, HT	100s listed on undated previous record; however, this appears very questionable	A, C, D, EV, Mammal bone, OS	None	18 m^2 ME, BT	B, E, G, P?, R, WW II fortifications built on site	Bolsa Chica Gun Club (1899-1964) and WWII artillery emplacements exist at this site	Cottrell and Rice (1975), Herring (1968), Mason (1987) McKenna (1986), Nissley et al. (1975), Ross and Desautels (1970), SRS (1987)
CA-ORA-82	M, I	50,000	130+	A, BA, BM, C/D, GS, H, M, MS, P, PP (2 obsidian flakes)	8 burials reported	A, AS, C, CR, FAR, M, O, OS, P	4320±200	Largely unreported, but extensive excavations	B, E, G, L?, O, P, R	Excavated by PCAS, CSULB, and Wiede (1967) OH = 6.8μ 6.9μ	ARI (1973), Cottrell (1980), Lind (1976), Mason (1987), Munoz (1975), Ross and Desautels (1970), Schroth (1983), Wiede (1967, 1969)
CA-ORA-83/ 86/144	M, I	90,000	200+	A, BA, BM, C/D, ±400 CS, charmstones, choppers, ±40 D, GS, H, M, MS, PP, shell beads, tarring stones (5 obsidian tools)	None reported	A, Bird, C, CR, FAR, Fish, O, OS, T, Mammal	33 dates ranging from 7600-2334	253 A, 25+ BT, Mag, 128.7 m^2 ME, extensive SC	B, E, G, L, P, R, WW II fortifications on site	"The Cogged Stone Site," subject of dispute over NRHP status OH = 2.5μ	Ahlering (1973), ARI (1971a, 1971b), Butzbach (1975), Carter and Howard (1975), Chace (1969), Cooley (1973), Cottrell (1980), Cottrell and Rice (1975), Herring (1968), Munoz (1975), Ross and Desautels (1970), Whitney-Desautels et al. (1986); see also text discussion
CA-ORA-84/ 289	M, I	18,000	60+	A, BM, C/D, GS, H, HF, M, MS, PP, S (1 obsidian flake)	None reported	A, C, D, H, O, OS, T	5 dates ranging from 4700-4120	37 BT, 10.5 m^2 ME, SC	B, E, G, L?, O, P, R		ARI (1971), Cottrell and Rice (1975), Mason (1987), McKenna (1986), Ross and Desautels (1970), SRS (1988b)

Table 6.3. Selected Attributes of Bolsa Chica Archaeological Sites

Site	Components[1]	Size (m^2)	Maximum Depth (cm)	Artifacts and Features[2]	Human Remains	Ecofacts[3]	^{14}C Dates (uncorrected years B.P.)	Excavation[4]	Prior Impacts[5]	Comments	References
CA-ORA-85	M, I, LH	22,000	90+	A, BA, C/D, choppers, daub?, drills, H, GS, M, MS, PP, S, SB (6+ items of obsidian)	Human bone noted, but no burials found in excavations	A, C, fish, mammal, O, OS, T	5 dates ranging from 4180-3380	54.8 m^2 ME	B, E, G, L?, P, R. WW II fortifications on site	Presently being excavated by Westec Services, Inc.; OH = 5.9μ, 6.6μ, 6.9μ, 7.7μ, 7.9μ, 8.2μ	Anonymous (1964), ARI (1964), Chace (1969), Cooley (1973), Cottrell and Rice (1975), Eberhart (1964), Herring (1968), Mason (1987), McKenna and Mason (1987), Ross and Desautels (1970), SRS (1988a), Schilz et al. (1987)
CA-ORA-88	H, M?	50,000	70+	A, C/D, GS, 8 HS, HM, HT, M	None reported	A, C, CR, FAR, O, OS, P, T	None	None known	B, G, O, P?, R	Site of first oil well on Huntington Mesa	ARI (1973), Mason (1987), Ross and Desautels (1970)
CA-ORA-288	M	Destroyed	Destroyed	Previously reported: A, C/D, GS, H, M, MS	None reported	C, H	None	9 BT, SC	Totally destroyed	Totally destroyed	Cooley (1973), Cottrell and Rice (1975), Mason (1987), Ross and Desautels (1970)
CA-ORA-290	P	Destroyed	Destroyed	A, no artifacts noted or previously reported	None reported	A, C, CR, FAR, M, O, OS, P	None	BT, 5 m^2 ME	Totally destroyed	Totally destroyed	Ahlering et al. (1971b), Mason (1987), Ross and Desautels (1970)
CA-ORA-291	M, I, LH	2,500	140	2 features, A, BA, BM, basketry?, C/D, choppers, drills, GS, M, MS, net sinkers, P, PP, SB, tarring, pebbles, (1 PP and 6 flakes of obsidian)	None reported	A, AS, bird, C, CR, fish, mammal, O, OS, P, T	None	A, BT, 89 m^2 ME	B, E, P?		Ahlering et al. (1971a, 1971b), Mason (1987), Ross and Desautels (1970)

Table 6.3. Selected Attributes of Bolsa Chica Archaeological Sites

Site	Components[1]	Size (m^2)	Maximum Depth (cm)	Artifacts and Features[2]	Human Remains	Ecofacts[3]	^{14}C Dates (uncorrected years B.P.)	Excavation[4]	Prior Impacts[5]	Comments	References
CA-ORA-292	P	3,200	30+	A?, C/D, M, worked glass	None reported	A, C, FAR, P	None	None	B, G?, P, R		Cottrell (1980), Mason (1987), Ross and Desautels (1970)
CA-ORA-293/ 294	M, I	40,000	90+	A, C/D, D, GS, H, M, MS	None reported	A, C, CR, O, OS, P, TR	2150±35	BT, I m^2 ME	B, E, G, O, P?, R	Very high debitage density compared to other area sites	Cottrell (1980), Mason (1987), Ross and Desautels (1970), SRS (1985)
CA-ORA-364	P	20,000	60+	A, C/D, GS, M, MS	None reported	A, C, CR, O, OS, P, T	None	None	B, G, O, R, grass mowing		Mason (1987)
CA-ORA-365	M, I, H	50,000	100+	A, Biface, C/D, CS, GS, H, HF?, HT, M, MS, P, PP (1 obsidian flake)	None reported	A, AS, C, CR, FAR, mammal, O, OS, P	3 dates ranging from 4365 to 2900	BT, 6 m^2 ME, SC	B, E, G, O, R	Previously also designated as CA-ORA-88; historic occupation may be that of Borchard family	ARI (1973), Mason (1987), SRS (1985)
CA-ORA-366	P	15,000	Unknown	A?, Biface, GS	None reported	A, C, P	None	None	E, G, O, R	Heavily impacted	Mason (1987)

KEY

1. Components: (See discussion in text)

H Historic
I Intermediate
LH Late Horizon
M Millingstone
P Prehistoric

2. Artifacts and Features:

A Anthrosols
BA Bone artifact(s)
BM Bowl mortar(s)
C/D Core(s) and/or debitage
CS Cogged stone(s)
D Discoidal(s)
GS Unclassified ground stone
H Hammerstone(s)
HF Housefloor/living surface (prehistoric)
HM Historic machinery
HS Historic structure/structural remains
HT Historic trash deposit(s)
M Mano(s)
MS Millingstone(s)
P Pestle(s)
PP Projectile point(s)
S Scraper(s)
SB Shell bead or other shell artifact(s)

3. Ecofacts:

A Argopecten aequisulcatus
AS Astraea undosa
C Chione sp.
CR Crepidula onys
D Donax gouldii
EV Exotic vegetation
FAR Fire-affected rock
H Haliotis sp.
M Mytilus californianus
O Ostrea lurida
OS Other shell (non-artifactual)
P Polinices lewisii
T Tivela stultorum
TR Tresus nuttallii

4. Excavation:

A Auger boring(s)
BT Backhoe trench(es)
Mag Magnetometer study
ME Manual excavation (area in m^2)
SC Surface collection

5. Prior Impacts:

B Bioturbation
E Erosion
G Grading/trenching
L Looting
O Oil extraction/refining
P Plowing/disking
R Roads

Table 6.4
Data Potentials and NRHP Eligibility
of Bolsa Chica Cultural Sites

Site	NRHP Eligibility*	Further Information Needed for NRHP Assessment**	Additional Evaluation Prior to Data Recovery***	Technology	Subsistence	Settlement/Land Use	Exchange/Commerce	Ethnicity	Paleoenvironmental Data	Chronology	Demography	Ceremonial Practices	Ethnohistory/History	Architecture/Engineering
CA-ORA-78:														
Prehistoric	-	-		?	+	+			+	+				
Historic	?	+		+	+	+	+			+			+	+
CA-ORA-82	+	-	+	+	+	+	+		+	+	+	+		
CA-ORA-83/86/144	+	-	+	+	+	+	+	+	+	+		+		
CA-ORA-84/289	?	+1		+	+	+	+		+	+				+
CA-ORA-85	?	+1		+	+	+	+	+	+	+		+	?	?
CA-ORA-88														
Prehistoric	?	+		+	+	+	?		+	+				
Historic	?	+		+		+	+			+			+	+
CA-ORA-288	-	-		+	+	+				?				
CA-ORA-290	-	-			+	+				?				
CA-ORA-291	+	-	+	+	+	+	+	+	+	+				
CA-ORA-292	?	+		+	+	+	?		+	+				
CA-ORA-293/294	?	+		+	+	+	+	?	+	+				
CA-ORA-364	?	+		+	+	+			+	+				
CA-ORA-365														
Prehistoric	?	+		+	+	+	+	?	+	+		?		+
Historic	?	+		+	+	+	+			+			+	?
CA-ORA-366	?	+		+	+	+	+		+	+				

* NRHP Eligibility: Not eligible (-); possibly eligible, but further data needed for assessment (?); probably eligible (+).

** See Recommendations in Chapter 2.

*** While sufficient data exist to assess NRHP eligibility, more evaluation will be needed at these sites in order to design a data recovery program.

1. As designed, investigations underway at this site by Westec Services, Inc., (Schilz et al. 1987) should provide the data needed to assess its NRHP eligibility.

CA-ORA-78

This large site on Bolsa Chica Mesa encompasses an Indian activity area characterized by marine shell, small quantities of chert debitage, and possible anthrosols, and the superimposed remains of the Bolsa Chica Gun Club (see Figure 6.1). Features related to World War II-era use of the site are also present. Limited excavations in the prehistoric component(s) have revealed low densities of shell (60 g/m^3) and debitage, with considerable historic disturbance in the upper levels (McKenna 1986; Nissley et al. 1975). Of the recovered shell, 49 percent is that of the Little Bean Clam (Donax gouldii)--a tiny mollusk unlikely to have been of much dietary significance. The presence of "hundreds" of human burials noted in the original unsigned record for this site is equivocal, given the paucity of archaeological remains documented in previously reported studies.

Historic remains at CA-ORA-78 include at least 14 separate features (some of which were grouped into thematically-related clusters during recording), deposits of domestic and architectural remains, underground utilities, roads, footpaths, and exotic vegetation/landscaping. At least three features relate to World War II-era use of the site: two gun emplacements and the concrete foundation of a quonset hut. Most of the remaining features are remnants of the Bolsa Chica Gun Club, built in 1899 and razed in 1964. A trash deposit related to the early historic use of this site contains abundant discards including many time-sensitive, domestic artifacts. Natural gas and oil discovered while excavating a water well for the gun club was harnessed for use at the facility, and eventually led to subsequent development of the area for oil extraction and refinement. Further details regarding this site are presented in Chapter 3.

The prehistoric component at CA-ORA-78 has been sampled sufficiently to reveal that it contains only very limited quantities of cultural material which probably cannot significantly advance archaeological knowledge. While testing of the prehistoric deposits has yielded some limited information regarding subsistence, settlement, exchange, and paleoenvironment, and could be expected to provide minimal chronometric (radiocarbon assays on shell) and technological data, the small quantities of materials present would be inadequate to evaluate most research questions. For this reason, the prehistoric component is probably not eligible for inclusion in the NRHP.

In contrast, the historic component(s) at CA-ORA-78 likely is (are) eligible for the NRHP based on both research potential and historical association with persons and/or events important in national, state, and local history. The site's historic use can be associated with two distinct activities: operation of the Bolsa Chica Gun Club; and use of two World War II artillery emplacements and associated features. Remains from both activities are known solely from surface observations recorded during this study and limited background archival research (see Chapter 3, supra). Additional data will be needed to evaluate both adequately. Specifically, subsurface features and artifact deposits need to be identified and sampled as needed to assess their integrity,

Figure 6.1. Overview of CA-ORA-78 as it appears today, facing east. (Photograph by J. Sorensen).

structure, and contents. Resource-specific archival data and oral testimony also need to be explored.

Based on existing information, the gun club remains may provide data useful in studies of early historic recreational use of the Bolsa Chica area, including information on subsistence, commerce, environment, and chronology. Artifacts from the site may also chronicle important technological changes, and some limited information regarding architecture also can be expected from foundation remnants and structural debris. Comparable data from World War II use of the site can be expected to yield information on the same range of research domains, although remains from that era are just less than 50 years old, and thus are not yet eligible for the NRHP.

In addition to the research value, the historic components also are significant historically since they are associated with important developments and people. The discovery and first exploitation of the region's natural gas/oil reserves occurred at the Bolsa Chica Gun Club, where they were used for lighting and appliances. The gun club also was largely responsible for initiating the construction of water-control facilities which significantly altered the distribution of natural plant and animal communities and presaged later reclamation of the Bolsa Lowlands. A Signal Bolsa Corporation security guard mentioned that the movie actor Gary Cooper visited the gun club, and other notable persons who may have been members or guests there contribute to the historical importance of this site. While just less than 50 years old, the World War II fortifications at CA-ORA-78, as well as those present at and

adjacent to CA-ORA-83/86/144 and -85 constitute the physical remains of a highly significant historical era for the nation.

CA-ORA-82

Located on Huntington Beach Mesa, this large prehistoric site extends across Edwards Street, beyond the study area. It is characterized by widespread (est. 50,000 m2) deposits of anthrosols as deep as 130+ cm containing abundant shell and fire-altered rock, and relatively numerous artifacts, including items ascribable to the Intermediate Horizon. Eight human burials also have been exhumed at the site (Lind 1976; Muñoz 1975:28)--all from east of Edwards Street (and outside the study area). Only a small portion of the extensive excavations at this site have been reported (Wiede 1967, 1969). A single radiocarbon date of 4320±200 is reported by Schroth (1983:59) for a shell sample of unknown provenience. CA-ORA-82 has been impacted by repeated plowing east of Edwards Street and with other localized disturbance from roads and use of oil extraction equipment west of that road. However, since the site is quite deep in many areas, intact subsurface deposits probably remain.

This site appears to have good potential for contributing to research on a wide range of topics. Extant, but as-yet-unreported collections from the site may have already yielded information that could contribute to the resolution of some questions. The only human burials excavated at any of the project sites came from CA-ORA-82, although some human bone also was noted on the surface of CA-ORA-85. Such remains signal the potential to examine questions regarding social organization, ceremonial practices, demography, health and population statistics, and likely other problem domains as well. When combined with chronometric data, grave lots also may contribute substantially to the development of a meaningful local chronology.

The large quantities of artifactual and ecofactual material present in this site suggest the potential to resolve diverse questions regarding technology, subsistence, exchange, paleoenvironmental conditions, chronology, and possibly other research domains. The deep deposits at this site appear to reflect lengthy use--an observation supported by time-sensitive artifacts found there. Thus, long term cultural changes could be examined in detail.

CA-ORA-83/86/144

Known as the "Cogged Stone Site," CA-ORA-83/86/144 consists of a very large (est. 90,000 m2) and locally deep (to 250 cm) deposit of anthrosols with abundant ecofacts, fire-altered rock, and artifacts. Pothunters and archaeologists have collected more than 400 cogged stones, as well as many other time-sensitive items such as projectile points and shell beads, indicating Millingstone and Intermediate occupations. A suite of 33 radiocarbon dates on shell ranges between ca. 7660 and 2334 years B.P. for the southwestern portion of the site. While plowing disturbance has resulted in some inconsistencies in the distribution of these dates, they trend toward greater age in deeper deposits. Whitney-Desautels and others (1986) conclude that only a small area

within the southwestern portion of the site retains sufficiently abundant cultural remains in stratigraphically meaningful associations to warrant further study.

Two loci, previously recorded separately as CA-ORA-83 and CA-ORA-86, are combined here because of the continuous distribution of cultural materials between them. Both loci have been sampled extensively during numerous field studies, concentrated mostly at the southern end of the site (i.e.,the CA-ORA-83 locus) (see Mason 1987 and Chapter 4 for a review of these studies). However, the central portion of the site which contains deep anthrosols with copious ecofactual and artifactual materials has never been sampled because it was considered disturbed (Figure 6.2). Significant disturbance has occurred throughout much of the site area, but the subsurface extent of impacts in some areas, particularly in the central portion of the site, has not been assessed systematically. Therefore, some intact deposits--perhaps even fairly extensive ones--may yet exist at this site.

While not quite 50 years old, several World War II military features are present on and adjacent to CA-ORA-83/86. These include remains of Shore Battery 128, a second much smaller gun emplacement, and another small battery or other fortification. Within a few years these World War II features may be eligible for the NRHP, at which time they should be evaluated in conjunction with other fortifications present at CA-ORA-78 and -85 elsewhere on Bolsa Chica Mesa.

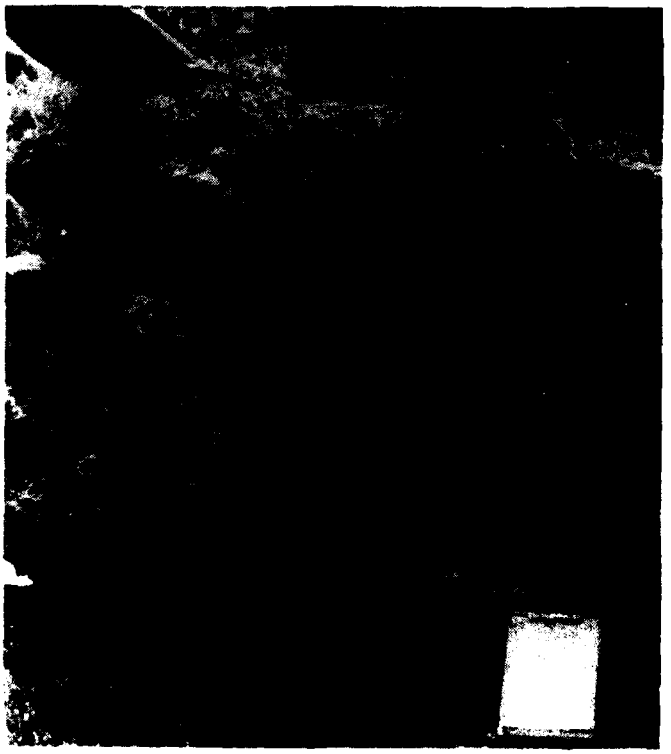

Figure 6.2. Cut bank showing 200+ cm of cultural deposit in Woodman Pole Company lot in central portion of CA-ORA-83/86. (Photograph by T. Van Bueren.)

As documented in the Data Compendium for this report, the NRHP eligibility of CA-ORA-83/86/144 has been repeatedly scrutinized and disputed (Hammon 1980, 1983; Marsh and Thornton 1982; Mellon 1982; SRS 1981). No formal determination of eligibility has been made. While intensive testing at the site has indicated important data potentials, the deposits in large portions of the resource are apparently heavily disturbed. No testing has yet been performed to confirm such disturbance in the central portion of the site now occupied by the Woodman Pole Company lot. Even if the site is extensively disturbed, however, it has the potential to yield some significant information.

The site almost certainly functioned as an important cultural center, judging by the abundance, types, and diversity of artifacts and ecofacts recovered there. More cogged stones have been found at CA-ORA-83/86/144 than anywhere else in southern California, and numerous discoidals, shell ornaments, charmstones, and other artifacts found there together suggest important research potentials in the realms of ceremonial practices, economic exchange, ethnicity, and chronology. Cogged stones remain enigmatic in terms of function, but have been found purposefully buried--suggesting they may have served a non-utilitarian use. Elucidation of their function and the temporal sensitivity of particular stylistic variations thus holds great interest. Employing comparative data from other excavated sites in the region, data from this site could be used to examine important questions regarding spheres of social and economic influence, the status and function of CA-ORA-83/86/144, the chronology of the increasing sociocultural complexity apparent there, and settlement patterns both within the project area and beyond its borders.

Abundant faunal remains reflect the exploitation of diverse environments not all of which existed coevally. Thus, both changes in subsistence regimes and alterations in the paleoenvirnment of the area could be explored if reasonably intact, stratified cultural deposits remain at the site. Fossil pollens and other paleobotanical remains, if present, could also significantly contribute to such studies--particularly if non-site soil deposits also were sampled for comparison. In addition, seasonality of site use (or its permanent occupation) could be explored using the faunal remains. Other materials from the site could provide the data needed to examine issues regarding technology and subsistence, and how they were linked to other aspects of site use. Utilitarian items occur relatively frequently at CA-ORA-83/86/144, and include some classes of time-sensitive artifacts such as projectile points that also will be useful for building a local chronology.

CA-ORA-84/289

This site combines because of their proximity two loci formerly recorded as separate sites. Encompassed is an area of some 18,000 m^2 with anthrosols, abundant shell, and Millingstone Horizon artifacts. Five radiocarbon dates on shell from the basal levels of CA-ORA-84 locus range from 4700 to 4120 years B.P., and register some disturbance of the deposits (SRS 1988b:47). A single bowl mortar fragment suggests possible use of the site after the period ascribed to the Millingstone Horizon.

The northeast locus (CA-ORA-84) formerly was much more extensive, but has been reduced to a mere remnant by the excavation of a large borrow pit and the construction of roads and oil well pads. Impacts on the southwest locus (CA-ORA-289) have occurred primarily as a result of plowing, although other limited disturbances are also evident. The site has been subjected to numerous backhoe trenches, surface collection, and controlled manual excavations (ARI 1971; McKenna 1986; SRS 1988b), and is scheduled for further testing by WESTEC Services, Inc. (WSI) in the fall of 1988 (Schilz et al. 1987). The CA-ORA-84 locus is now largely destroyed, while the southwestern portion of the site has not been adequately sampled to fully evaluate its subsurface structure, content, and integrity. As designed, WSI's investigation at this site will provide the data needed to assess its NRHP eligibility.

While portions of this site have been entirely destroyed, the remaining deposits in the southwest locus may offer the potential for examining important research questions in the domains of technology, subsistence, settlement, exchange, paleoenvironmental conditions, chronology, and architecture. With the exception of another possible housefloor at CA-ORA-365, the living surface documented by ARI (1971) in the CA-ORA-84 locus is the only such feature documented thus far at any of the Bolsa Chica sites. Additional architectural remains at this site may present an opportunity to examine questions about the prehistoric structures and their functions.

Fairly abundant faunal remains from the northeastern locus of this site have yielded data regarding diet, exploitation of a variety of environmental zones, seasonality of site use, and paleoenvironmental changes. Lagomorph, smaller rodent, and dog bones recovered from CA-ORA-84/289 reflect procurement from terrestrial areas, while abundant shell and fish, turtle, duck, and other bird bones indicate use of marshland, intertidal, and open/protected outer coast environments. The abalone (Haliotis sp.) noted at CA-ORA-84/289 during this study is worthy of note, since only trace quantities of that mollusk shell have been found at two other project sites (CA-ORA-288 [now destroyed] and -83/86/144), and it would have had to have been imported from some distance except perhaps in early Holocene times.

CA-ORA-85

This 22,000 m^2 site is located on Bolsa Chica Mesa facing the Sunset Gap (now Huntington Harbour). It consists of relatively thick (to 90 cm) deposits of anthrosols containing abundant ecofacts, numerous artifacts, including some possible daub, and human bone. Projectile points and shell beads indicate use of this site beginning in the Millingstone Horizon and continuing into the Late Horizon. Five radiocarbon assays on shell have yielded ages between 4180 to 3380 years B.P.(SRS 1988a). The disjunct stratigraphic position of the dated samples, coupled with the apparent association of a small, triangular point with a sample dated 3500*80 years B.P., may indicate disturbance.

The site has been excavated during two field seasons (Mason 1987), but those studies were spatially limited, and the earlier studies by Eberhart remain poorly reported. Investigations presently being

conducted at this site by WSI will provide the data needed to assess the NRHP eligibility of CA-ORA-85 (Schilz et al. 1987). However, those data are not yet available--so it should be noted that additional information on subsurface structure, constituents, and integrity are still needed for an eligibility evaluation. The integrity of the upper levels of CA-ORA-85 has been significantly compromised by repeated plowing, with other impacts locally confined. It is probable that the site originally extended northward across Los Patos Avenue. Additional testing will be required to characterize the subsurface structure, contents, and integrity of this site sufficiently to adequately assess its NRHP eligibility. Nevertheless, some important data potentials are suggested by existing reports on the site.

Several items noted at this site indicate research potentials unique to it, or rarely found in other Bolsa Chica sites. While no burials have been exhumed at CA-ORA-85, human bone has been noted on the surface of the site. The only other site where human bone has been recovered is CA-ORA-82. These finds suggest the potential for human interments or cremations in the deposits at CA-ORA-85, and the prospect for examining questions regarding ceremonial practices, health and population characteristics, social organization and demography, as well as other research domains such as chronology if artifacts are associated with any human remains. The possible presence of daub at this site is unique among the project's sites, and signals the potential for the study of questions about architecture.

In addition, only one other site in the study area (CA-ORA-291) has evinced use during the Late Horizon. As a component within the larger, and ever-changing, settlement system of the Bolsa Chica area, these sites therefore hold promise for examining changes in late prehistoric cultural systems. Among the questions which might be resolved with data from this site is the timing and nature of the Shoshonean incursion. The lengthy occupation indicated at this site, combined with its diverse and abundant artifacts and ecofacts also will likely permit the examination of long and short term changes in technology, subsistence, exchange, and paleoenvironmental conditions, as well as providing many data needed for the construction of a local chronology.

World War II fortifications at this site include gun emplacements, and a large, low concrete tank with an open top. These features, along with additional fortifications present at or adjacent to CA-ORA-78 and -83/86/144, are just less than 50 years old, but should probably be assessed for NRHP eligibility in the near future (see recommendations in Chapter 7).

CA-ORA-88

This large (50,000 m^2) site on Huntington Beach Mesa consists of both historic and prehistoric remains. The site originally recorded as CA-ORA-88 by McKinney in 1963 was later redesignated as CA-ORA-365 (ARI 1973) because the CA-ORA-88 State trinomial had been mistakenly reassigned to this resource (Ross and Desautels 1970). IRI has retained the CA-ORA-88 designation for this site to avoid confusion, since many reports have perpetuated the early mistake. The prehistoric component(s)

at this site occur in anthrosols, as deep as 70+ cm, with abundant shell, fire-altered rock, small amounts of debitage, and a few groundstone tools. No sampling of these deposits has occurred to date, and neither diagnostic artifacts or chronometric data are available to aid temporal placement.

The historic elements of the site relate chiefly to Standard Oil Company's first oil extraction and processing facility on Huntington Mesa, built in 1919. Remains of this enterprise include eight features: structure pads with associated concrete foundations, roads, pipelines, a wooden trough, some antique machinery (Figure 6.3), and scattered industrial/architectural remains. The first oil well in this location is designated Bolsa No. 1, but may have been known initially as Huntington No. 1. Additional oil wells subsequently were drilled in the immediate vicinity; some of these are still operating. As a result, the prehistoric portion of the site has been impacted significantly. Most of the oilfield machinery once associated with the historic component is now gone.

Since the prehistoric component is known only from surface observations and the examination of cut banks, its data potentials remain poorly known and will require testing for more complete assessment. Only limited data potentials are indicated in the realms of technology and exchange, since few artifacts have been observed at the site. However, higher frequencies of artifacts may exist in subsurface contexts. The diverse and plentiful shells present in CA-ORA-88's deposits presently indicate the site can make more important contributions to the solution of inquiries into subsistence, land use/settlement, chronology, and paleoenvironemental conditions. Other potentials may become apparent during testing.

Figure 6.3. Antique oil heating tanks (part of Feature 6) at first oil well drilled on Huntington Mesa (CA-ORA-88), facing west. (Photograph by J. Sorensen.)

The remains of the historic component at this site are potentially significant both in terms of their research and historical importance. Some antique machinery, wooden troughs, and other facilities present at the site may elucidate early twentieth century technology of the oil industry. Further evaluation by an industrial or engineering historian will be needed to assess the remains present at this site, their relation to the development of the local oil industry, and their scarcity/uniqueness.

CA-ORA-288

This former site in the central portion of Bolsa Chica Mesa reportedly consisted of a small area (8350 m^2) with anthrosols containing shell. Limited surface collecting and backhoe trenching led to the recovery of artifacts that suggest site use during the Millingstone Horizon (Cooley 1973). During IRI's examination of the place where this site was previously reported, a few dozen Haliotis sp. and Chione sp. shell fragments were found widely scattered, but no anthrosols or artifacts were observed. In agreement with Cottrell and Rice (1975:21), we believe that CA-ORA-288 site has obliterated. For that reason, the site is considered ineligible for the NRHP.

CA-ORA-290

This former site consisted of a small (1100 m^2) area at the base of Huntington Beach Mesa near its seaward margin. The site was sampled with backhoe trenches and controlled manual excavations which revealed anthrosols containing only shellfish remains (Ahlering et al. 1971b). During IRI's reinspection, the only observed trace of this site was very small amount of possible anthropic soil with shell pushed up in a berm on the side of the road that skirts the northern base of the mesa. The former site area has been used extensively as a borrow pit, and has been graded to nearly the elevation of the adjacent marsh. Because its cultural deposits have been removed or destroyed almost entirely this former site is considered ineligible for the NRHP.

CA-ORA-291

This site, covering a small (2500 m^2) area on Huntingtin Beach Mesa, consists of anthrosols with abundant shell, other ecofacts, at least two features, several concentrations of fire-altered rock, and a relatively low density of artifacts. CA-ORA-291 extends from the top to the mesa base along a moderately sloping hillside. A fairly large sample of archaeological material was recovered through controlled manual excavation (Ahlering et al. 1971a, 1971b). Time-sensitive artifacts indicate that CA-ORA-291 was used from Millingstone Horizon times more or less continuously into the Late Horizon. Ahlering and others (1971) documented changes in subsistence practices and technology through time which appear to correlate in part with the changing environment of the Bolsa Chica area. They also delineated several activity areas during late prehistoric occupation of the site, while earlier site use patterns were considered to be more diffuse. Heavy ground cover limits our confidence in presently defined site boundaries.

This site appears to be in relatively pristine condition with the exception of certain localized impacts and the possibility that the upper portion of the deposit might have been plowed in the past.

Data recovered during testing at CA-ORA-291 suggest potential for information of considerable interest, particularly given the lengthy and continuous occupation of the site. The site is therefore probably eligible for the NRHP. CA-ORA-291 is one of only two archaeological resources (the other is CA-ORA-85) evincing Late Horizon use. It thus has the potential to elucidate diachronic changes from Millingstone through Late occupations including inquiries into subsistence, technology, resource procurement, exchange, paleoenvironmental conditions, and the Shoshonean incursion. When compared with other project sites it will also provide insights about settlement patterning and possibly other research domains.

CA-ORA-291 is one of only a few project sites that have yielded evidence of prehistoric archaeological features--in this case a concentration of net sinkers, a possible hearth, and several concentrations of fire-affected rock. Additional features at CA-ORA-291 will permit further delineation of intra-site activity areas, as well as providing data useful for the resolution of questions regarding subsistence, technology, and chronology. The discovery of numerous bone tools, shell artifacts, and a possible basketry impression at this site will permit the examination of many questions not possible at most other project sites.

Abundant, well-preserved, and highly varied faunal remains have also been recovered at CA-ORA-291, although they remain inadequately quantified for comparative purposes in Ahlering and other's (1971a) report. The distribution of various mollusk shells and certain broadly classified vertebrate bones led those investigators to conclude that changing frequencies of certain animal remains were correlated with paleoenvironmental alterations. Unfortunately, while research into such correlations should prove a fruitful topic for future investigations at this and other Bolsa Chica cultural sites, Ahlering and others provide only limited support for their conclusion.

CA-ORA-292

This small (3200 m2) site on Huntington Beach Mesa consists of possible anthrosols containing moderate amounts of shell and fire-altered rock, and small amounts of debitage and groundstone tools. No archaeological sampling has occurred on this site, and its depth and period(s) of use remain unknown. This site may have been plowed in the past, but has otherwise received few impacts.

This site probably reflects fairly limited data potentials judging by the low density of cultural materials. Subsurface testing will be needed to fully evaluate its research significance. Use of this site can likely best be understood in relation to the larger and significantly more diverse assemblages found at neighboring sites CA-ORA-291 and -293/294. When compared with the locations of other sites in the project area, it will provide data on settlement patterning. This site

may also reflect limited potentials to contribute information regarding technology, subsistence, paleoenvironmental conditions, chronology, and possibly exchange. It is therefore presumed to be eligible for the NRHP.

CA-ORA-293/294

Situated on Huntington Beach Mesa, this large (40,000 m2) site combines two loci (previously recorded as separate "sites") due to their proximity and the presence of buried cultural deposits observed in an erosion-cut bank between them (Figure 6.4). The site spans the gradually to moderately sloping sides of the mesa from its crest nearly to the edge of the marsh, and extends on both sides of a shallow draw, now more deeply entrenched due to recent erosion. The southwest locus (CA-ORA-293) is characterized by possible anthrosols containing moderate amounts of shell and a few groundstone tools. The northeast locus (CA-ORA-294) consists of anthrosols with abundant shell, fire-altered rock, and debitage, and moderate amounts of other artifactual materials (see Table 6.1). Large quantities of debitage and other flaked stone artifacts at this site stand in marked distinction to all other cultural resources examined during this study. The site appears to have been used during the Millingstone and Intermediate horizons, based on artifacts found there. A single radiocarbon date of 2150+35 on shell falls within the timeframe of the Intermediate Horizon.

Very limited testing at CA-ORA-293/294 consisting of a single 1x1-m unit and one backhoe trench placed in a peripheral portion of the site was reported by SRS (1985). A larger sampling program will be needed to adequately assess the subsurface structure, contents, and integrity of this site. The site appears to be in excellent condition, with the exception of certain localized impacts.

CA-ORA-293/294 is potentially eligible for the NRHP based on certain distinctive aspects of its cultural assemblage, the abundance and diversity of the cultural materials present there, and the apparent integrity of most of the site's deposits. Debitage, cores, and flaked stone tools occur more frequently at this site than in any other project archaeological resource, and thus may provide the best opportunity to examine lithic technology, stone procurement, and probably exchange and other related research domains.

While no time-sensitive bifaces have been found at CA-ORA-293/294, their presence is likely, given the high density of flaked stone materials found at the site. Diagnostic artifacts and radiocarbon dates from this site have the potential to significantly advance the development of a local chronology. Abundant ecofactual remains indicate potential data relevant to questions about diet, seasonality, and paleoenvironmental conditions. When compared with other dated components from sites in the project area, important data regarding diachronic changes in settlement, exchange, tool manufacturing practices, and ethnicity may be forthcoming from this site. Testing may reveal additional data potentials at CA-ORA-293/294.

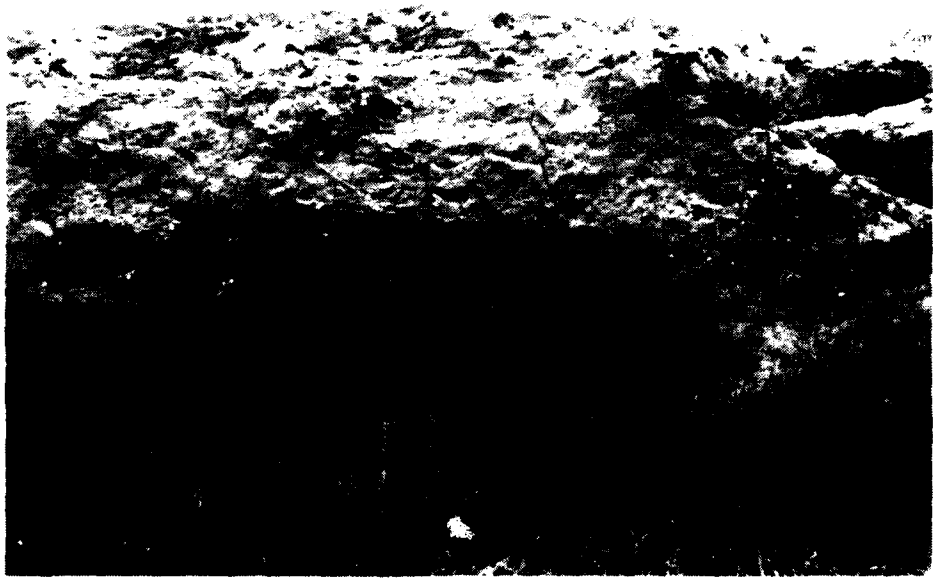

Figure 6.4. Profile of cut bank in gully between loci at CA-ORA-293/294, showing buried cultural deposit. (Photograph by T. Van Bueren.)

CA-ORA-364

This site encompasses a 20,000 m2 area on Huntington Beach Mesa that contains anthrosols of moderate depth (60+ cm) with moderate quantities of shell and small amounts of debitage and groundstone tools. This site has never been sampled archaeologically, and no firm basis exists for dating. CA-ORA-364 has received some relatively superficial impacts, but appears to retain significant integrity.

While testing will be needed to fully assess the data potentials and integrity of this site, present knowledge of CA-ORA-364 suggests that it can contribute information needed to examine questions in the domains of subsistence, technology, chronology, and paleoenvironmental conditions. When compared with other project sites, CA-ORA-364 will also provide additional data regarding settlement and land use patterns. Use of the site may be associated with the occupation of CA-ORA-365, a large and complex archaeological resource located nearby.

CA-ORA-365

This large (50,000 m2) site is located on the highest portion of Huntington Beach Mesa and extends northwesterly toward the Bolsa Chica lowlands along a minor, gently-sloping ridge. CA-ORA-365 was first recorded by McKinney in 1963 as CA-ORA-88; however, all subsequent investigators applied the CA-ORA-88 designation to another nearby cultural site--an assignment IRI has perpetuated to avoid confusion.

Figure 6.5. Profile of cut bank showing possible living surface/housefloor (Feature 3) at CA-ORA-365. (Photograph by T. Van Bueren.)

CA-ORA-365 features both prehistoric and historic remains. Extensive prehistoric anthrosols contain abundant shell, moderate amounts of fire-altered rock, and low to moderate amounts of debitage and other artifacts. During IRI's study a possible living surface or housefloor was also noted (Figure 6.5). A single cogged stone was observed by McKinney in her 1963 recording of the site; a laterally-grooved discoidal stone was collected during IRI's study in 1988 (Figure 6.6).

The prehistoric deposits at CA-ORA-365 were investigated minimally with surface collection, backhoe trenching, and some controlled manual excavation during a single field study (SRS 1985). Three radiocarbon dates on shell range from 4365 to 2900 years B.P. These dates, combined with cross-dating of artifacts, indicate that the site was used during both the Millingstone and Intermediate horizons. Substantial impacts are evident on the surface of the site, and a lack of depositional integrity is suggested by the minimal sampling of the prehistoric component conducted by SRS (1985). However, SRS's sampling was largely in peripheral areas of the site. Further testing will be needed to assess the integrity and structure of prehistoric deposits in much of the central portion of this site.

Historic remains at this site consist of two discrete trash deposits containing primarily household debris such as retail glass containers, tableware, and glassware. Both deposits contain large numbers of time-sensitive artifacts evincing late nineteenth- and early twentieth-century production. These historic features could be related to the Borchard residence, known to exist in the immediate vicinity by

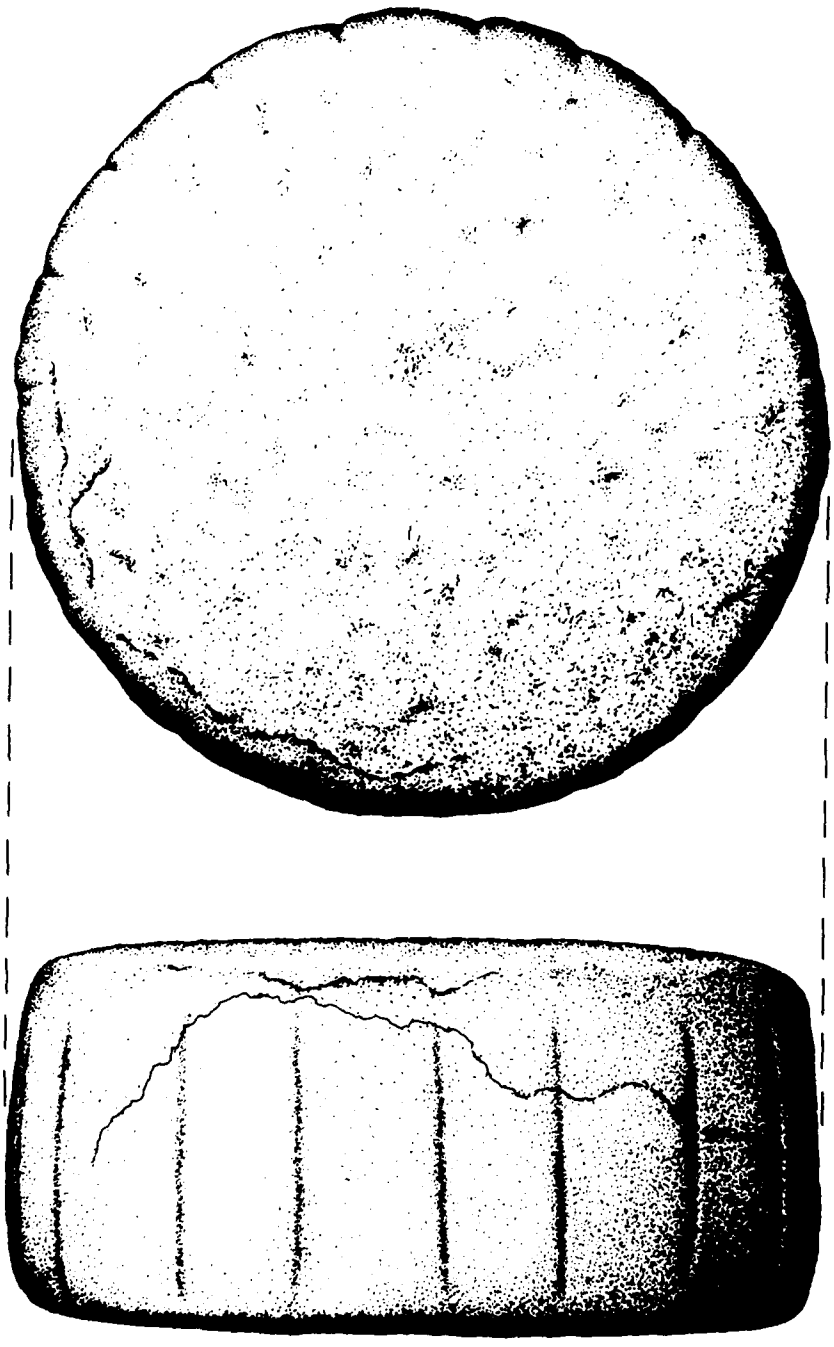

Figure 6.6. A shallowly-grooved discoidal stone of sandstone, from CA-ORA-365. This specimen measures 11.0 cm in diameter by 5.4 cm thick. Nineteen shallow grooves are visible on the perimeter. Caliche encrusts the artifact. (T. Van Bueren drawing).

1905 (see Figure 3.3 above). No testing has been directed at the evaluation of the historic component at CA-ORA-365, although historic artifacts were reported from some limited sampling in other portions of the site (SRS 1985).

Both the prehistoric and historic components at this site may contribute significantly to understanding of the history and prehistory of the area. This site is the only project cultural resource on Huntington Beach Mesa known to contain cogged stones, and one of only two where such artifacts have been recovered in the study area as a whole (the other being CA-ORA-83/86/144). This fact, combined with the rich and diverse array of artifacts and shell observed at the site, suggest CA-ORA-365 may have been an important center. If portions of the site retain integrity, then data from the site may productively be used to resolve numerous questions pertaining to diachronic changes in subsistence, technology, exchange, chronology, paleoenvironmental conditions, and possibly ethnicity and ceremonialism.

The presence of a possible housefloor at the site indicates the potential to examine the domain of architecture. Among project sites, only CA-ORA-84/289 and possibly -85 also reflect this potential. Intrasite patterning of activity areas may also be examined with data from CA-ORA-365, although the partial destruction of the site may somewhat limit this contribution. When compared with information from other project resources, this site will contribute additional data regarding settlement patterning. Testing may reveal other data potentials, since this large and complex site remains poorly known at present.

The historic component at this site also may elucidate the lifeways of early twentieth century settlers, and how they related to regional and national developments. In addition to archaeological testing, archival work and possibly oral testimony will be needed to fully evaluate the importance of this component. Present information suggests that the historic deposits at CA-ORA-365 may contribute data on technology, subsistence, commerce and consumer behavior, and chronology. If structural remains can be located, such data would provide additional information in the realm of architecture.

CA-ORA-366

This 15,000 m^2 prehistoric site, located on Huntington Beach Mesa, consists of possible anthrosols with abundant shell but few artifacts. No sampling has occurred, and the site has been heavily impacted by historic oil extraction activities which may have included grading, and certainly includes oil wells, underground pipelines, and roads. This site remains poorly understood, and will require testing to adequately assess its data potentials, structure, and integrity. The site appears to have limited potential to address questions in the domains of technology, subsistence, exchange or resource procurement, chronology, and paleoenvironmental conditions. Other data potentials may be revealed by subsurface studies.

Summary

Evaluation of extant site conditions, survey reports, and reports of various subsurface archaeological investigations of the cultural resources in the Bolsa Chica project area permit assessment of the NRHP eligibility of six of the 14 prehistoric sites. Archaeological studies have been adequate to demonstrate that three sites will yield significant data toward the resolution of local and regional research problems and that the cultural deposits retain sufficient integrity to make them eligible for the NRHP. Two prehistoric sites have been destroyed (CA-ORA-288 and -290), while the prehistoric component of a third (CA-ORA-78) has yielded only small quantities and limited types of cultural remains, from disturbed contexts; these three sites do not meet the criteria for NRHP listing. Existing data are not adequate to allow informed assessment of the significance of eight other sites with prehistoric components or of the historic elements at three sites. Archaeological testing was proposed (WESTEC 1987) and presumably has been completed at two of these eight prehistoric sites; thus NRHP eligibility of CA-ORA-84/289 and -85 can likely be evaluated after the release of WESTEC's testing report. NRHP evaluation at the other six prehistoric sites and three historic components will require further study, recommendations for which are offered in Chapter 7.

7:

RECOMMENDATIONS

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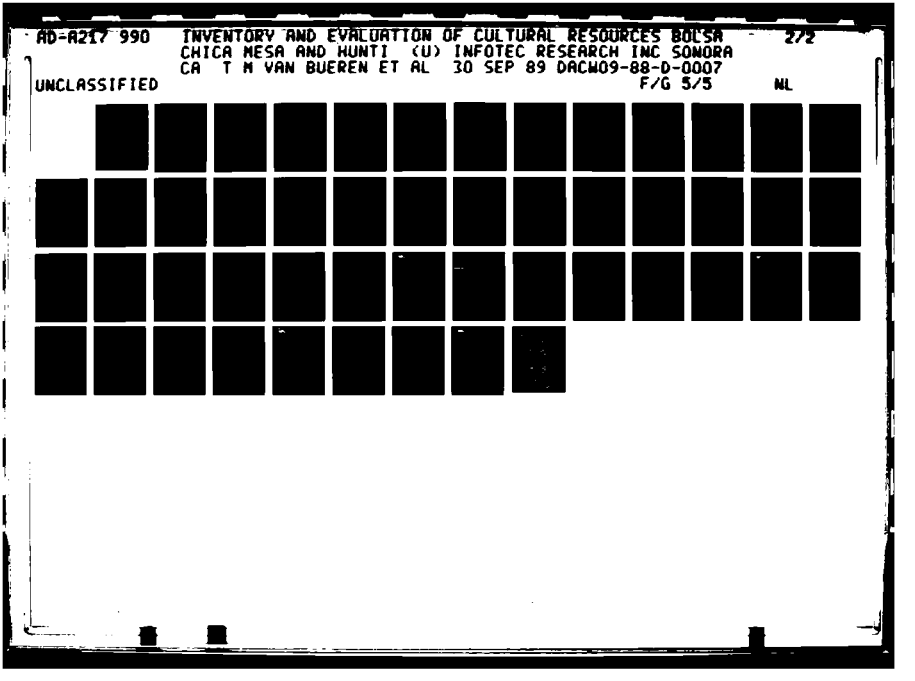
and Michael J. Moratto

This chapter offers recommendations for additional studies to assess the significance and National Register of Historic Places (NRHP) eligibility of eight prehistoric and three historic components. The recommended work would provide the CoE with information to comply with Section 106 of the National Historic Preservation Act and Section 2(b) of Executive Order 11593, pursuant to 36 CFR 800.

Although limited field and library research will be adequate for assessing NRHP eligibility, review of previous work indicates that extant data may be inadequate for planning the management of certain sites. Hence, we discuss, in the final section, supplemental data that would be required for the design of an adequate data-recovery or protection program, should proposed undertakings impact NRHP-eligible sites. Such additional information about site structure and integrity will be needed from the three NRHP-eligible prehistoric sites, and perhaps from some of the eight sites whose data potentials remain to be demonstrated by testing.

Prehistoric Sites: Testing for NRHP Eligibility

As detailed in Chapter 6, data from eight of the Bolsa Chica prehistoric sites are insufficient to assess their NRHP eligibility. Most of these sites have not been sampled, while others have been tested only peripherally. Testing at six of the eight sites would elucidate their research potentials and NRHP eligibility. Ongoing studies by WESTEC at the other two sites (Schilz et al. 1987) would provide adequate data for NRHP-eligibility evaluation of CA-ORA-84/289 and -85. The recommended studies would aim to learn whether these sites are "likely to yield... information important to prehistory or history" (36 CFR 60.4). Achieving this goal will require a careful balance between defining data potentials and realizing those potentials. The job at hand is to determine the kinds of information that the sites might yield if more extensive studies were to be performed in the future. Investigations must be designed to meet explicit objectives, namely, to: define the extent, content, integrity, age, occupation units or components, and research potentials of selected sites; acquire data regarding intra-site variability at previously-tested sites; and define spatial, temporal, and cultural relationships among sites within the study area.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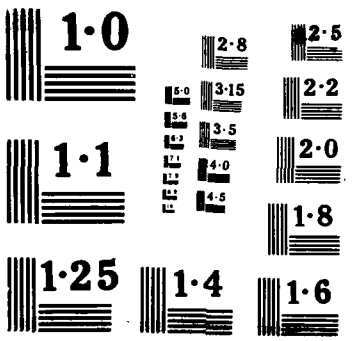
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Objectives

As explicated in Chapter 6, assessing the significance of the remaining six prehistoric sites will require explicit linkage of data potentials, defined through surface and subsurface investigations, with relevant research domains. The ultimate goal of the testing program, however, should not be to answer definitively, the prevailing research questions; rather, the testing should pursue limited, realistic objectives. Although one cannot hope to learn much about site structure or prehistoric social organization, for example, from the small test samples required for NRHP-eligibility evaluation, useful information can be generated if these samples are extracted and interpreted thoughtfully. IRI believes that seven objectives can be met within the parameters of the Bolsa Chica testing program. These are:

(1) To estimate the horizontal and vertical extent of the sites: Reliable knowledge about the spatial distribution of archaeological remains will be essential for (a) assessing extant and potential impacts, (b) developing a realistic basis for management planning, and (c) recognizing intra-site spatial patterning. This should entail mapping the surface extent of anthrosols, artifacts, and features, taking into account the evidence of soil color, chemistry, and texture, topographic irregularities, vegetative patterns, and the surficial distribution of artifacts, shell, fire-altered rock, bone, debitage, and other exotic materials. The vertical extent of archaeological deposits can be determined most efficiently through augering, probing, inspection of natural soil exposures, and through observations within manually excavated test units and mechanically excavated trenches. Anthropic and non-anthropic deposits observed in these units should be distinguished in terms of physical attributes, archaeological constituents, and visible stratification.

(2) To define site content: The object here is to identify and, where possible, quantify the diverse archaeological materials preserved at the sites to be tested. A knowledge of site content is an absolute prerequisite for evaluating research potentials (see No. 7, below) and for planning realistically for any data-recovery work. Defining site content is mainly the process of compiling an inventory. One must collect specimens and data to answer the following types of questions: (a) What kinds of materials--e.g., bone, shell, fiber, clay, stone, metal, glass, etc.--are found within each of the identified soil or stratigraphic units at the sites? (b) Do the sites contain shell, recoverable carbon, obsidian, time-sensitive artifacts, or other remains suitable for dating? (c) Are plant macrofossils preserved in adequate quantity and variety to support meaningful analyses, and, if so, in what frequencies and contexts do they occur? (d) Are faunal remains sufficiently abundant and complete for zooarchaeological identification, quantification, and distributional studies? (e) Do the number and distribution of fire-altered rock warrant analysis of spatial patterning? (f) Can debitage be characterized with respect to material types, technical attributes, and spatial distribution; would intensive debitage analysis likely be profitable? and (g) What are the types and approximate frequencies of recovered artifacts, and what kinds of analyses would be possible if an adequate sample of these specimens were

available? Sampling and analytic methods should be designed specifically to address these and related questions.

(3) To investigate site structure: "Structure" refers to the anatomy or architecture of a site. The concept encompasses vertical and horizontal stratification, the nature and distribution of features (e.g., hearths, housefloors, shellfish processing areas, etc.), gross evidence of activity areas, and the like. Structure provides the context for site content. Hence, a clear understanding of structure is required to assess site integrity and to develop spatial, temporal, and functional interpretations of the archaeological record. One cannot expect a detailed characterization of site structure to emerge from limited testing; definitions of structure typically necessitate excavations of large areas connected by straticuts, not to mention extensive analyses of recovered assemblages. Even so, we think that some valuable first approximations regarding site structure can be developed in the course of testing. For example, inferences about activity areas may be drawn from the spatial relationships among shell midden deposits, other activity areas, and any housepits that might be discovered. Careful examination of surface manifestations may reveal both midden and non-midden anthrosols, and stratigraphic exposures may shed light on the nature and relative age of deposits associated with various components. Moreover, while samples will be small, quantitative analyses of shell, debitage, fire-altered rock, and other constituents from the test units may offer preliminary indications of intra-site patterning. Finally, the test units may produce at least some initial suggestions of the kinds of subsurface features likely to be encountered. While the foregoing approaches admittedly will not define site structure with any real precision, they will permit assessments of site integrity and complexity, and will provide essential information about the context of the archaeological deposits for assessing significance.

(4) To assess the integrity of the sampled sites: This objective seeks to learn the extent to which site structure has been modified and, concomitantly, the degree to which context has been disturbed. At issue is the possible attrition of interpretive potential. One may assume at the outset that the Bolsa Chica sites have been affected by the myriad forces of natural pedoturbation--burrowing mammals and invertebrates, root activity, erosion, colluviation, and so on (cf. Wood and Johnson 1978). In addition, the sites variously have been affected by shoreline erosion, plowing and disking, casual and perhaps concerted artifact collecting, recreational use, road grading, and oil extraction activities.

Such modifications should be examined, individually and collectively, to assess their overall impact on the archaeological deposits. The extent of disturbance should be considered in light of the size, depth, and structure of each tested site so that a meaningful assessment can be made of past damage as well as surviving data potentials. In this regard, we anticipate that geomorphological observations and the vertical distribution of time-sensitive artifacts will prove especially helpful in assessing stratigraphic integrity.

(5) To identify major occupations: To the extent feasible, the aim here is to discover the number and general nature of major occupations at each site. Available data suggest that the Bolsa Chica area witnessed a long sequence of Indian cultural developments, beginning no less than 7600 years ago. Although limited testing will not provide many details about the components, it should at least permit recognition of separate occupation levels and areas. This may be accomplished partly by reference to strata, features, and artifacts, and partly by comparisons of the Bolsa Chica assemblages with others in the region.

(6) To determine the age of identified occupations: Temporal control will be necessary in order to (a) develop site-specific and local cultural chronologies, (b) compare recovered assemblages with those from dated components elsewhere in the region, and (c) relate specific occupations to dated paleoenvironmental changes and conditions. The relative and/or absolute age of various specimens and analytic units can be determined through radiocarbon dating, geomorphology, stratigraphy, artifactual cross-dating, featural associations, and possibly obsidian hydration measurement.

(7) To assess the research potentials of the sites: In many ways the realization of this objective depends upon the achievement of the others (supra). For example, one must control for site content, structure, integrity, and time before research potentials can be evaluated. Still, the assessment of potentials is a distinct process that involves linking available classes of data (i.e., those confirmed by testing) with appropriate research questions and domains. This is the essence of site significance evaluations, and ultimately should be the goal of the testing program.

Methods

Because the nature of sites and available data vary considerably, IRI recommends site-specific methods to investigate content, extent, depth, integrity, and structure. The methods and sampling plan at each site should be designed to efficiently explore data potentials and specific parameters (e.g., site disturbance, relationship among site loci) that are, as yet, undefined; again, the goal is to define potentials, not to realize them.

The following methods, used in various combinations, seem appropriate for ascertaining data potentials:

(1) Surface collection and mapping of artifacts;

(2) Assessment of site size and intra-site structure through collection of shell distribution data (counts and weights) from regularly-spaced surface grid units; phosphate testing; and, in areas where surface materials are not plainly visible, excavation of shallow (10 cm) surface transect units;

(3) Assessment of subsurface midden constituent distribution and density, as well as site depth, using regularly-spaced auger borings;

(4) Assessment of site content, structure, age, and integrity through the excavation of selectively placed test units, using manual rapid recovery or controlled manual excavation techniques; and

(5) Assessment of stratigraphy and integrity through geomorphological study of unit profiles, observation of the stratigraphic distribution of midden constituents, analysis of samples from control columns, and artifact distributions.

Depending on the nature of anticipated future impacts at particular sites, it may be worthwhile, also, to employ backhoe trenching to aid in assessing site integrity, size, stratigraphic relationships, and site structure. While this method may be the most efficient means for defining certain site parameters, IRI does not recommend mechanical exploration unless the site deposits will undoubtedly be destroyed by other activities. Such exploration may be most appropriate during the first phases of a data-recovery program.

We recommend that investigation at each site proceed in a phased manner so that results from initial studies (e.g., surface collections, augering) can inform and direct the use of subsequent investigations (e.g., manual excavations and column sampling). This will permit optimal return from labor-intensive work and will preclude unwarranted testing beyond the point when data potentials can be confirmed or refuted.

Similarly, laboratory analyses should be phased. Certain analytic procedures which have come to be standard may be inappropriate for merely defining research potentials at these eight sites. For example, while detailed quantitative analysis of shell and bone would be required to reconstruct changing dietary preferences and, by inference, paleoenvironmental changes that might have occurred in the Bolsa Chica locality, gross quantification of shell and bone weights, volumes, and condition will provide adequate indication of whether detailed analyses would be feasible and appropriate, should a data-recovery program be needed. In keeping with this principle that fewer data may be required for NRHP-eligibility assessment than are necessary for realizing a site's research potential, it may be advisable to scope the field recovery and analytic procedures at different levels for the testing program. That is, while standard field samples, amenable to detailed analyses, can be collected, immediate analyses may be limited to cursory studies that permit assessment of their data potentials.

Below, we explicate, site-by-site, those parameters which require further investigation to permit valid assessment of NRHP eligibility. For each of the eight project sites we recommend the types of studies that should provide the necessary information and those recommendations are also tabulated (Table 7.1). In two cases, CA-ORA-84/289 and -85,

Table 7.1

Summary of Recommendations
to Complete NRHP Evaluation at Project Sites

Site	Mapping	Phosphate Testing	Augering	Surface Transect Units	Backhoe Trenching*	Surface Collections	Shovel Test Pits	Metal Detection	Manual Rapid Recovery Units	Controlled Manual Excavations	Control Columns	Archival Research	Oral Testimony
CA-ORA-78													
Historic	+				+		+	+		+		+	+
CA-ORA-84/289													
Prehistoric	+	+			+	+	+			+			
CA-ORA-85	+	+			+	+	+			+			
CA-ORA-88													
Prehistoric	+	+	+	+		+			+	+	+		
Historic	+											+	+
CA-ORA-292													
Prehistoric	+	+	+	+					+		+		
CA-ORA-293/294													
Prehistoric	+	+	+	+	+	+			+	+	+		
CA-ORA-364													
Prehistoric	+	+	+	+					+	+	+		
CA-ORA-365													
Prehistoric	+	+	+			+			+	+	+		
Historic	+				+		+	+		+		+	+
CA-ORA-366													
Prehistoric	+	+	+	+	+	+			+		+		

*This method may be appropriate only if the site will be destroyed.

the required data for NRHP-eligibility evaluation are expected to result from WESTEC's current testing program.

Site-Specific Recommendations for Testing

CA-ORA-84/289

While investigation of the northeastern lobe of this site (the CA-ORA-84 locus) has revealed important data potentials, almost nothing is known regarding the structure, constituents, integrity, and data potentials of deposits in the southwestern locus (CA-ORA-289). Since the northeastern locus is now almost entirely destroyed, it is important to gather information about the remaining portions of the site in order to evaluate its NRHP eligibility. WESTEC's investigation at this site are expected to provide the data required to assess its NRHP status. WESTEC proposed testing (Schilz et al. 1987) that would include surface collections, sample collection of surface shell, soil phosphate testing, excavation of about 30 shovel test pits, eight 1x1-m controlled manual excavation units, peripheral backhoe trenching, and instrumental mapping. When evaluating the significance of this site, the results of studies in the remaining portions of the site should be compared with previous findings at the CA-ORA-84 locus.

CA-ORA-85

Previous testing at this site has focused on its southeastern lobe, where deposits appear to be disturbed. In order to assess NRHP eligibility, testing should be designed to reveal if intact deposits exist elsewhere on the site. It will also be important to discover if additional Late Horizon materials or structural remains (as suggested by possible architectural daub reported above) are indicated in previously untested areas. The implementation of WESTEC's proposal (Schilz et al. 1987) would provide data needed to evaluate NRHP eligibility. WESTEC recommended surface collection of artifacts and shell samples, phosphate testing, excavation of about 50 shovel test pits and 12 controlled manual excavation units, peripheral backhoe trenching, and instrument mapping.

CA-ORA-88

This site has never been excavated, and therefore remains poorly understood at present. Substantial impacts are apparent over large portions of the site, due primarily to oil extraction activities. Testing at this prehistoric component should be directed toward establishing its research potentials by addressing the research objectives outlined above, with particular attention to identifying any intact deposits.

Initial testing should focus on the delineation of site extent, structure, intra-site patterning and quantification of constituents, and depth of the prehistoric cultural deposits. This could be accomplished most effectively through systematically-spaced surface collection units, augering, phosphate testing, and examination of cut banks along the bluff margin at the southwestern edge of the site. Where few surface

indicators exist, surface transect units might be substituted for surface collection units in areas where cultural deposits are expected based on augering and/or phosphate testing. These methods can be expected to inform the placement of test units. Manual rapid recovery units with control columns placed strategically in areas with the least apparent disturbance could then be used to assess site constituents, vertical stratification, integrity, and the age of the occupation(s). If intact site deposits can be identified, controlled manual excavation units could investigate smaller site constituents. All tests, the extent of deposits, features, and impact areas should be mapped to scale.

CA-ORA-292

This small site is characterized by a very low density of cultural materials in an area that has likely been plowed regularly. No testing has occurred to date. Given the scarcity of cultural materials on the surface, characterization of site extent, depth, structure, and the distribution of cultural materials across the site can best be accomplished with surface transect units, augering, and phosphate testing. Several manual rapid recovery units with control columns can then be placed in areas with the highest concentrations of cultural material to identify the quantities and types of artifacts present, vertical stratification, integrity, and the age of the occupation(s) indicated there. All tests and the extent of this site should be mapped accurately.

CA-ORA-293/294

This large and complex site includes several distinct activity loci and a buried cultural deposit between them. As described in Chapters 4 and 6, testing at this site has been limited to a single unit and one backhoe trench in a peripheral area. Surface indications suggest that CA-ORA-293/294 may hold significant data potentials. Thus, the most critical data needed to assess NRHP eligibility is information on the integrity of deposits. Data on site extent, structure, constituents, intra-site patterning, and the age and preliminary characterization of all indicated occupations need only be collected in quantities sufficient to confirm the site's significance.

Different procedures will be appropriate in various portions of the site to effectively delineate the extent of its cultural deposits and establish the variability in the distribution of cultural materials. Phosphate testing and augering are recommended throughout the site. Those tests should be combined with surface transect units in the southern end of the site where cultural materials are present only in low quantities, while surface collection units would be most effective in the richer deposits at the northern end of the site. The area between the north locus (CA-ORA-294) and the buried cultural deposit in the gully to the south should be explored with augering, or perhaps backhoe trenching, to clarify the extent of that deposit and its relationship to the rest of the site.

Following those tests, and informed by their results, several manual rapid recovery and controlled manual excavation units with

control columns could be excavated in each of the site's loci to assess integrity, stratification, the abundance, types, and distribution of site constituents, and the age and nature of the occupation(s). All tests, features, and impact areas should be mapped to scale.

CA-ORA-364

The surface of this large site is characterized by low to moderate densities of shell and few artifacts. Numerous impacts, primarily the results of oil extraction activities, are apparent on the site; nonetheless, large areas appear to retain their original, gently undulating topography. No testing has yet been done at this site, and only limited data potentials are indicated from survey data. Therefore, testing will need to focus on providing data regarding the full range of objectives required for the assessment of data potentials. Given the nature of the surfacial cultural remains at this site, a combination of phosphate testing, augering, instrument mapping, and surface transect units are recommended to identify the extent of the archaeological deposits and the distribution of cultural materials within them. Several manual rapid recovery units and a few controlled manual excavation units with control columns can then be strategically placed in areas that appear to be least disturbed to ascertain depositional integrity and characterize stratification, the distribution and abundance of cultural materials, and the age and nature of the occupation(s).

CA-ORA-365

The prehistoric component(s) at this very large and complex site have been tested minimally--primarily in marginal areas. Those investigations indicated rather pervasive disturbance of the sampled deposits. Extensive impacts caused by oil extraction activities and a large borrow pit are apparent at CA-ORA-365, and have disturbed and destroyed large portions of the site. Nevertheless, available data suggest the site may contain important research potentials. The significance of the remains at this site depend in large measure on whether the deposits retain integrity. Thus, a primary goal of additional testing at the CA-ORA-365 prehistoric components is to determine if any intact deposits remain. The extent and depth of the site will need to be explored, and the variability of its cultural contents quantified. Additional attention should also be devoted to testing the possible housefloor. Testing of the prehistoric and historic components of this site should be coordinated closely.

Given the relatively abundant cultural materials on the surface of this site, definition of extent, depth, and distribution of cultural materials can be accomplished most effectively with a combination of phosphate testing, surface collection units, augering, instrument mapping, and the examination of cut banks. Manual rapid recovery and controlled manual excavation units with control columns can then be placed in areas most likely to contain intact cultural deposits, including at least one such unit in the area of the possible housefloor, and another where the marginally-grooved discoidal stone was recovered during IRI's survey. Excavation of those units would be designed to provide

information on site integrity, constituents, and to better define and date the occupations.

CA-ORA-366

This small and apparently much disturbed archaeological site has never been tested. Only limited data potentials are indicated from surface inspections. Elucidation of data potentials will require investigations of the testing objectives outlined above. Given the extensive disturbance, particular attention will need to be focused on integrity. Since the archaeological deposits may be partially concealed by overburden, augering, backhoe trenching, and surface transect units will be the most effective means to delineate site depth, extent, and the distribution and abundance of cultural materials. However, the presence of buried pipelines and other oil industry facilities on site will need to be considered carefully in the placement of all tests. In areas not covered by fill, phosphate testing and surface collection units are recommended to supplement the augering program. Informed by the results of these initial testing activities, a few manual rapid recovery units with control columns should then be placed in areas that contain the highest densities of cultural material and have the greatest likelihood of being intact. All tests, impact areas, features, and the extent of this site should be mapped to scale.

Historic Resources: Evaluation for NRHP Eligibility

Three historic, non-Indian components will require further evaluation before their NRHP eligibility can be assessed. As well, World War II fortifications on Bolsa Chica Mesa will soon be 50 years old--an age at which they should be evaluated for NRHP eligibility. The assessment of the NRHP eligibility of these historic components will require data on both their research potentials and historic/public values. While all of the historic site components should be assessed in relation to regional developments, such consideration is particularly important for sites thematically representing oil exploitation and World War II coastal defense. The objectives of further assessment at the project's potentially significant historic site components are first briefly outlined below. Appropriate data-gathering methods are then summarized, and site-specific recommendations offered.

Objectives

Investigations at historic site components should be directed toward the same general goals as those at prehistoric components. Accordingly, the studies suggested by IRI would define significance per the NRHP criteria. The research potential of the historic components should be delineated through archaeological studies, archival research, and oral testimony. Such studies may also elucidate the historical and public significance of the sites. Archaeological studies at the historic sites should address the same basic objectives defined for the investigation of prehistoric resources, including definition of horizontal and vertical extent, site content, structure, and integrity;

identification and chronological placement of site use; and evaluation of research potentials. Expert opinions should be sought from industrial/engineering historians as needed to assess above-ground features such as those present at CA-ORA-88. Both focused and thematically-directed archival research and oral testimony should be conducted to inform evaluation of research potentials and provide data needed to assess the historic and public significance of the sites.

Methods

Varied methods will be needed to efficiently gather data regarding the significance of the diverse historic resources in the project area. The study requirements for each site are discussed individually below. Any archaeological testing at the project's historic, non-Indian components should proceed hand-in-hand with work being conducted at the prehistoric loci of those sites, since each study may provide data useful to the other. Recommendations for each site are also presented in Table 7.1.

Site-Specific Recommendations for Additional Evaluation

CA-ORA-78

As described in Chapter 6, the historic, non-Indian components at this site may be significant both in terms of their research potential and historic/public importance. However, additional data are needed to assess both of these domains. The World War II-era features at this site, and those present at or near other recorded sites on Bolsa Chica Mesa are discussed separately below, since they should be evaluated together as a thematically-unified group of remains. Data required to evaluate the NRHP eligibility of the Bolsa Chica Gun Club component at CA-ORA-78 include a sample of the archaeological deposits and features present there, and site-specific information on the formation, operation, and membership of the club.

Focused archival research and oral testimony should be directed toward establishing the historical and public importance of the gun club, as well as informing the archaeological testing which would follow it. Specific information should be sought on the layout and design of the gun club's buildings, the membership of the club (which possibly included famous persons significant under NRHP criterion [b]) its operation--including water control modifications to the Bolsa Lowlands, and the effect that the discovery of natural gas and oil reserves had on the club. Archaeological testing would then be needed to evaluate the research potentials of architectural remnants and artifact deposits. Shovel test pits, metal detection, and test trenches are recommended to initially identify features and building foundations, determine their structure, and provide data on the types and distribution of artifacts. Artifact-bearing deposits should then be sampled with controlled manual excavation to ascertain details regarding their stratification, integrity, contents, and age. All archaeological tests and identified features should be mapped accurately.

CA-ORA-88

While the historic oil extraction and refining remains at this site appear to have both research potential and historic/public importance, insuficient data presently exist to adequately evaluate either dimension of their significance. The industrial remains at this site should not be considered in isolation from the development of the oil industry of the region. Further evaluation of this site should therefore be directed toward the elucidation of both site-specific and thematic historical data and the research potential of the industrial remains.

Oil industry trade journals and production records, geological publications of the California Division of Mines and Geology, U.S. Geological Survey, other agencies, and other archival sources should first be consulted to establish the historic context of the industrial remains at CA-ORA-88. Exposure, detailed mapping, and identification of the archaeological remains at the site is then recommended. Consultation with an industrial/engineering historian may be required to identify and assess the significance of the physical remains, which include some antique equipment.

CA-ORA-365

The historic non-Indian component at this site, which reflects early twentieth century occupation, has been heavily impacted by subsequent oil extraction activities. Incidental historical information and surface observations presently available for this component are not adequate to assess its NRHP eligibility. No testing has been directed toward the evaluation of these historic remains to date, although limited subsurface sampling by SRS (1985) did reveal historic artifacts. Further evaluation at this site should therefore be designed to clarify its research potentials and historical importance. Such investigations should be coordinated carefully with studies of the prehistoric components at this site.

Focused archival research and oral testimony are recommended to identify the history of site use. Specific information should be sought regarding the occupants of the site, the duration of their tenancy there, their socio-economic status, and the locations of any structures and other features which may have left archaeological traces at CA-ORA-88. Such data would then be used to design an archaeological sampling program. The two known trash deposits at the site should be sampled with controlled manual excavation, while shovel test pits, metal detection, and backhoe trenching will probably be the most effective methods for identifying any architectural remnants and other features that may still exist at the site.

World War II Fortifications

The coastal defense fortifications on Bolsa Chica Mesa will meet the age criteria for possible inclusion to the NRHP in a few years. This fact, combined with their potential historical and public importance, dictate that they should soon be evaluated for NRHP eligibility. For the sake of economy, IRI recommends that they be

evaluated for NRHP eligibility in conjunction with the evaluation proposed at other historic site components in the project area. Because of their obvious unity in geographic setting and thematic function, the individual remains noted on and adjacent to Sites CA-ORA-78, -83/86/144, and -85 should be evaluated collectively. Data needed to evaluate the project area's World War II fortifications include historical information derived from archival sources and oral testimony, and assessment of their present condition.

Both focused and thematic historical research is recommended to elucidate the specifications, layout, construction, and deployment of the fortifications present in the project area. It is likely that engineering drawings and maps can be found for the Bolsa Chica defenses. Veterans groups and the U.S. Department of the Navy may provide important archival information and leads regarding potential informants stationed at these facilities during World War II. Archaeological documentation should then be prepared regarding the current condition of the resource, include descriptive text, photographs, and if they cannot be located through archival research, scaled plans of each feature.

Prehistoric Sites: Data Needed for Management Planning

While the studies outlined in the previous section should be sufficient for assessing the NRHP-eligibility of eight of the prehistoric Bolsa Chica sites, and while the NRHP-eligibility of six others (three which qualify for the NRHP and three that do not) has already been demonstrated, additional information may be required from many of the eligible properties to properly and effectively manage those sites. The need for supplemental data regarding site boundaries, site structure, and intra-site variability in integrity will be particularly compelling if management ultimately requires mitigation of impacts through avoidance or data recovery.

Here, it is important to distinguish between those known site qualities and data potentials that qualify each property for the NRHP and those site parameters which, despite the confirmation of a site's data potentials, remain poorly defined. That is, while limited testing might have revealed isolated site areas where significant material classes are abundant and deposits retain integrity, thus qualifying the site for the NRHP, such testing may not have succeeded in: (1) defining the limits of the important deposits; (2) revealing the most significant features of the site; or (3) identifying site loci which do not warrant management because of their negligible information potential, by reason of data redundancy or loss of integrity. Such data gaps are typical at most of the Bolsa Chica sites by virtue of the types and extensiveness of previous impacts and because of the research interests of many of the investigators who previously excavated these sites. Impacts from agriculture and oil extraction activities are widespread and often severe. Yet, because most excavations at the Bolsa Chica sites have been directed toward the richest shellfish and artifact deposits, the distribution of these impacts and of remaining intact deposits has not been explored systematically. So, while we do know that rich and generally

intact deposits are present in at least some portions of these sites, the extent of the significant deposits and the integrity of unexplored loci remain poorly defined. These kinds of data will be important for avoiding or protecting significant deposits or for designing a productive data-recovery program.

Refined definition of such site parameters as horizontal and vertical extent, site structure, relationships among loci, and integrity may be accomplished through a program that might include extensive and systematic augering, backhoe trenching to explore seemingly peripheral site areas and the relationship between loci, and selectively placed manual excavation units. Depending on the nature and location of anticipated project impacts, such a program would almost certainly be required at the two sites known to be eligible for the NRHP; data gaps at those sites are reviewed below.

CA-ORA-82

While the prehistoric remains at this site are considered potentially eligible for the NRHP, current information is insufficient to design a meaningful data-recovery program there. The structure, contents, intra-site patterning of cultural materials and features, and the location and extent of intact cultural deposits remain poorly defined. If appropriate data were collected from the extensive, unreported excavations east of Edwards Street, analysis of that information might suffice for the delineation of productive research there. However, testing will be required in the large portion of CA-ORA-82 west of Edwards Street, where only limited sampling has occurred (Weide 1967, 1969), and some additional testing may be needed in the eastern portion of the site if inadequate data exist for that area.

Such testing should be directed toward the characterization of site structure, contents, integrity, and the age and nature of the occupation(s). Particular attention should be devoted to the delineation of intra-site patterning of activity areas. For instance, do burials occur only in the eastern lobe of the site? Was the western end of the site devoted primarily to shellfish processing? Identification and dating of the occupation(s) at this site also merit close attention, since the Intermediate Horizon artifacts reported from the site are not in agreement with the single known radiocarbon date.

These goals can be achieved through the examination and selected analysis of previously collected data, supplemented as needed with additional site testing. Augering, surface collection units, surface transect units, phosphate testing, and the examination of cut banks may all be useful for defining the nature of site loci which presently lack adequate characterization. Such studies should then be used to select the placement of manual rapid recovery and controlled manual excavation units with control columns required for more detailed delineation of site stratification, contents, and the age and nature of the occupation(s).

CA-ORA-83

Although this site has been examined by repeated surface and subsurface sampling (Chapters 4 and 6), its central area has been ignored and therefore remains poorly understood. The central locus has received heavy impats from the construction and operation of the Woodman Pole Company lot, but intact deposits may yet remain there. Therefore, testing of that area should focus on defining any intact cultural deposits which may still exist. More limited attention should also be directed toward characterization of the structure, contents and ages of the occupation(s), and comparisons of those data with reported sampling in other parts of the site.

This additional testing could be pursued most efficiently with backhoe trenching, augering, the examination of cut banks, and, informed by the results of those initial tests, the placement of several manual rapid recovery units with control columns in the least disturbed portions of the central site area.

CA-ORA-291

Substantial testing at this site has provided almost all of the information needed to design a productive data-recovery program there. Only chronological information is lacking. Cross-dating of artifacts supports only general inferences regarding age. Therefore IRI recommends radiocarbon dating of shell samples recovered from meaningful context by previous investigators.

Similar supplemental data about site structure, boundaries, and integrity might also be needed from some or all of the eight sites still requiring testing for NRHP eligibility, again depending on the types of anticipated impacts. While such supplemental data are routinely collected during the first phases of mitigation planning or data recovery, those data can be used most effectively if they are collected early in the management planning process. Therefore, it may be advisable to conduct a supplemental testing program at NRHP-eligible properties as soon as potential site impacts have been defined. Such a program could be a logical and efficient extension of the limited testing program designed to evaluate NRHP-eligibility.

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APPENDIX A:

NATIVE AMERICAN INTERESTS AND CONCERNS

One of the nine tasks identified in the scope-of-work for this study (CoE 1988) was to consult with Indians about cultural resources in the project area. This we have done, initially through contacts with the Native American Heritage Commission and with the Native American Coordinator of the State Office of Historic Preservation, and subsequently by letters to 11 Indian groups and individuals in southwestern California. An example of our letter and a complete listing of addressees appear in the following pages. The remainder of this appendix presents the replies to our request.

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Infotec
research incorporated

13 March 1989

Ms. Beatrice Alva
122 East Pearl
San Gabriel, CA 92776

Re. Bolsa Chica Mesa/
Huntington Beach Mesa

Dear Ms. Alva:

Our firm has been retained by the Los Angeles District, Corps of Engineers, to ascertain the number and status of cultural resources in the Bolsa Chica Mesa and Huntington Beach Mesa area of Orange County, California. The enclosed map shows the boundaries of our study parcel.

One objective of our study is to identify and evaluate archaeological sites, historic properties, and places of significance to Native Americans within the study area. The information gathered during our research will be used for environmental planning purposes related to possible future development of the subject parcel. Accordingly, we would be grateful for any information you might share regarding cultural sites (such as former village locations, gathering places, cemeteries, sacred sites, or ritual areas) in the study area. Because our work schedule is fairly tight, we would appreciate an early reply.

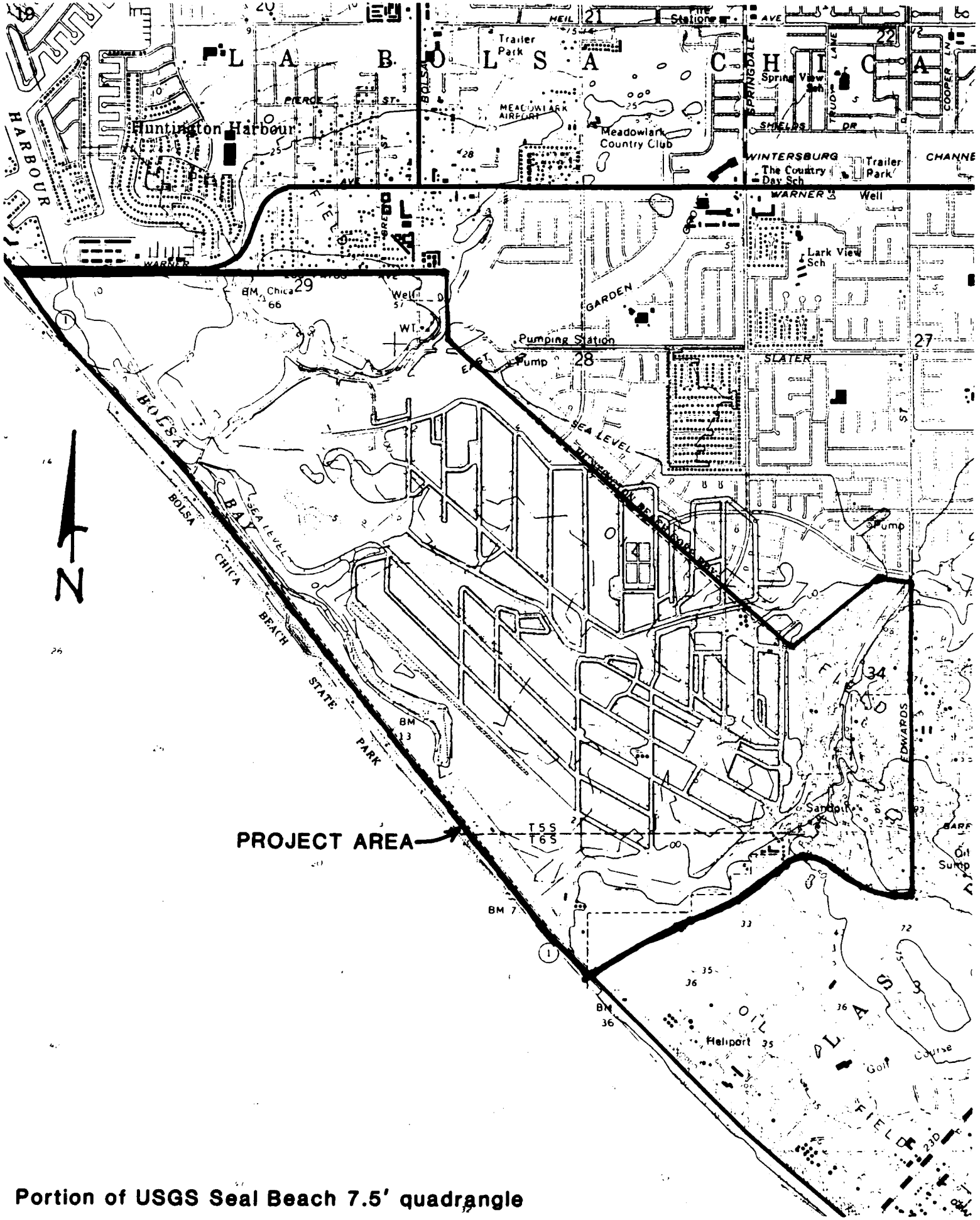
Thank you for any information you might provide.

Sincerely,

Michael J. Moratto, Ph.D.
President

tb
cc Steve Schwartz, Corps of Engineers

19524 Hillsdale Drive, Sonora, CA 95370 (209) 533-2902 • 533-2934



Portion of USGS Seal Beach 7.5' quadrangle

Addressees, 13 March 1989 Letter

Ms. Beatrice Alva
122 East Pearl
San Gabriel, CA 92776

Mr. Art Alvitre
4126 Potrero Road
Newbury Park, CA 91320

Ms. Cindi M. Alvitre
1149 Jadestone Lane
Corona, CA 91720

Mr. Ray Belardes
16760 Paradise Mt. Road
Valley Center, CA 92082

Mr. David Belardes, Spokesman
Juaneno Band of Mission Indians
31742 Via Belardes
San Juan Capistrano, CA 92675

Capistrano Indian Council
Att'n.: Ms. Juanita Foy
c/o Mission San Jua Capistrano
Capistrano, CA 92600

Mr. Fred Morales
211 East Main Street
San Gabriel, CA 91776

Mr. Art Morales
457 Meadow Street
Laverne, CA 91750

Mr. Steve Rios
Capistrano Indian Council
P.O. Box 304
San Juan Capistrano, CA 92675

Ms. Teeter Maria Romero
Capistrano Indian Council
P.O. Box 304
San Juan Capistrano, CA 92675

Mr. Jim Velasquez
1226 West Third Street
Santa Ana, CA 92703

April 4, 1989

Environmental Planning Section
US Army Corps of Engineers
P.O. Box 2711
Los Angeles, CA 90053-2325
(213) 894-3399

Michael J. Moratto, PhD
Infotec Research Inc.
19524 Hillsdale Drive
Sonora, CA 95370

Dear Mike:

Enclosed is a phone conversation record pertaining to native American contacts for Bolsa Chica. Please include this in the documentation you are preparing for this project. Mr. Velasquez contacted me in response to your letter to him. He will probably not respond to you directly, though I urged him to.

Sincerely,

Steven J. Schwartz
Archaeologist

TELEPHONE CONVERSATION RECORD

March 20, 1989

Subject: Native American Concerns - Bolsa Chica
Person Calling: Mr. Jim Velasquez (714) 547-4237
Person Called: Steven Schwartz (213) 894-3399

Mr. Velasquez represents the Coastal Gabrielino. He has his "papers" from the Bureau of Indian Affairs confirming that he is a Coastal Gabrielino. In fact, he states that the BIA recently reaffirmed his status.

Mr. Velasquez stated that the Coastal Gabrielino are very concerned about any development in the Bolsa Chica area. They are not opposed to development, but do have serious concerns that their cultural values may be compromised by development, if not handled properly.

The Bolsa Chica area is very sensitive to Coastal Gabrielino values. There are probably burial sites all throughout the area. The Gabrielino buried their deceased wherever they happened to die. As such, burials can be found everywhere within their territory. Any burials, and associated grave goods, located as part of planning or construction of any project in the area, should be reburied with proper respect on another part of the property which will not be subject to future disturbance.

Mr. Velasquez further stated that the sacred sea turtle, which, at one time frequented the Bolsa Chica marsh, no longer visits the area; due to development.

Mr. Velasquez concluded by saying that he will be cooperative, and looks forward to being consulted in the future concerning any future development in the Bolsa Chica area.

Steven Schwartz

March 17, 1989

Mr. M. J. Moratto, PH.D.
President

Dear Sir;

In reply to your letter of March 13, 1989, regarding Bolsa Chica & Huntington Beach mesas, I'm sorry to ~~to~~ say I personally have no knowledge of this area.

In all probability, there are such sites; therefore I would strongly urge you to direct what artifacts or findings (if any) to museums or such places where they could be displayed for the enjoyment of the general public. Thank You!

Respectfully,
Beatrice Alva

infotec
research incorporated

9 April 1989

Ms. Beatrice Alva
122 E Pearl
San Gabriel, CA 91776

Re. Bolsa Chica Mesa/
Huntington Beach Mesa

Dear Ms. Alva:

Thank you for your prompt reply to my March 13th inquiry. Your concern for artifacts and other cultural remains in the study area is deeply appreciated.

Your letter, along with letters from other Indian groups and individuals, will be appended to our report, *Inventory and Evaluation of Cultural Resources, Bolsa Chica Mesa and Huntington Beach Mesa, Orange County, California*, which we expect to submit to the Los Angeles District, Corps of Engineers, on or before June 1. If you would like to have a copy of this report, please request one from Steve Schwartz at the Corps. It is my understanding that gratis copies of the report will be provided to interested parties upon request.

Thank you again for taking the time to prepare such a thoughtful response to my earlier letter.

Sincerely,

Michael J. Moratto, Ph.D.
President

tb
cc S. Schwartz

19524 Hillsdale Drive, Sonora, CA 95370 (209) 533-2902 • 533-2934

INTERTRIBAL COUNCIL OF TONGVA
formerly, the gabrielino indians
4126 POTRERO RD. NEWBURY PARK, CA. 91320

March 30, 1989

Mr.Michael J. Moratto, President;
Infotec Research Incorporated
19524 Hillsdale Drive
Sonora, CA. 95370

Dear Mr. Moratto,

Thank you for your corporation's inquiry about the Tongva aboriginal areas stillused by the Traditional Tongva today.
The site you mention in your correspondence has been one of great controversy, that is to say, one Jim Velasquez has created an unfavorable atmosphere among the Ataham (juaneno/luiseno) and Tongva Communities.

As a network of Traditional People, we do not acknowledge this person as a member of any of the mentioned nations, that would also include the Cahuilla and Chumash Nations as well.

This network of Traditional Nations mentioned will discount anything this person tries to interpret as cultural or spiritual information.
As with all Native Americans, we have a protocol which we use.
This is called counsel, and in this counsel a Traditional etiquette is used for all decisions and policies.

We as a network of the above mentioned have summoned Mr. Velasquez to counsel to answer for his actions regarding the cultural and environmental destruction of Ataham and Tongva lands which he has received vast amounts of monitary reward from the Irvine Corporation and other land developers so that they can comply with the state laws, and write off these sites, and continue their so called progress.

You will find inclosed the most recent copy of the Traditional Tongva Policy regarding Aboriginnal Resources, I hope this policy will help your corporation with the project and feel free to share this information with other involved agencies dealing with this project.

Being Traditionalist, we stand firmly on what has been addressed and hope you understand why our policy has been written.

Again, thank you for your correspondence.

Sincerely,

Acwot

Acwot, Tomeyar Speaker
for the Tongva Nation

c.c. Chief Raymond Belardes; Ataham Nation
Bob Rivera; Chumash Nation
Katherine Saubel; Cahuilla Nation
Cindi Alvitre-Porter; Tongva Nation
Kote / A' lukoy Lotah; Chumash Nation
Vera Rocha; Tongva Nation
Fred Morales; Tongva Nation

Jim Velasquez; ?????_??????????
Native American Heritage Commission

TRADITIONAL TONGVA POLICY REGARDING ABORIGINAL RESOURCES

JANUARY 1989

WITH THE CURRENT AMOUNT OF DESTRUCTION TO THE LAND AND RESOURCES BELONGING TO THE TRADITIONAL TONGVA, IT IS IMPERATIVE THAT THIS DOCUMENT BE DISTRIBUTED AMONG ALL FEDERAL, STATE AND LOCAL AGENCIES.

The Traditional Tongva are the remainder of the origional native population from the areas improperly designated as;
Los Angeles county, Orange county, San Bernadino county, Riverside county and parts of the eastern edge of Ventura county.

The Tongva are the Soverign Nation of non-christian indians whom still retain their Oral History, Language, and Religious Value System with their ties to their lands.
This Nation and its relations have never received monies from the Bureau of Indian affairs or the California Land Claims Act which was payment for land and native heritage.
We have never sold any of our land or resources.

We have been referred to as "gabrieleno indians or "mission indians";
Any person considering themselves as a gabrieleno or the latter is;
1.) a catholic or christian with no concept of Traditional values,
2.) received monies from the California Land Claims Act in the late 1960's to sell land that does not belong to them.
3.) because of the payment received from the C.L.C.A. this would terminate these persons from their according to the B.I.A.

The Tongva are not gabrielenos, the latter word being a spanish misnomer.
The word Tongva in our native language means" From the Earth";
The Tongva are also part of a National Network of Native Americans whom are Traditional in the same respect.

We as Traditional Tongva have distinguished that only what nature dictates will be absolute.

Because of the overwhelming amount of abuses to all the resources on the mainland, the ocean and the channel islands, this policy has been written.

Archaeology:
With our tribal experience dealing with the United States goverment in general, and all other agencies including; State, County,and city both public and private,
We have desided as the Tongva Nation, that all archaeological sites be left undesturbed, that includes all phases of excavation and in the near future, the remains of our ancestors including artifacts, be returned to the Tongva.
We know for a fact that the local museums and universities in southern california have collections and remains as well as museums and universities across the United States contain relics that belong to the Tongva.(ie lowie museum, smithsonian, etc.)

Environmental Destruction of Land Resources:
The United States goverment does not have a legal vehicle to possess the lands in southern california belonging to the Tongva nation because congress never designed nor ratified a treaty or land transaction.
Therefore, There will be no more projects on Tongva lands which include; drilling for natural gas, oil or water, mining, controlled burns on the land, the spraying of any chemical,herbicide, or introduction of biological bacterias, this includes the destruction of canyons, hills, mountains and the flora and fauna in these areas.
Road construction, real estate developement both commercial and residential, waterways, rivers, streams, ponds, springs and creeks.
This destruction of our homelands has prompted our nation to write this policy, the amount of the present developement has impacted the way of life for our culture, which includes; fishing in the ocean and on the mainland, hunting, gathering of materials to sustain our way of life such as plants, minerals we use on a daily basis and for ceremonies.

Environmental Destruction of the Ocean,
Fresh/Saltwater inlets,estuaries and the Channel Islands;
It is now public knowledge that the United States goverment in general , as well as State, and local agencies have allowed the dumping of dangerous sewage, which is composed of industrial and agricultural chemicals, pestisides, herbisides, into waterways which empty into inlets, estuaries and the pacific ocean.
Dumping city sewage treated or not also has contributed to the loss of water quality and the destruction of many ecosystems that sustain life in the waterways still used by the Tongva nation.
Oil wells and offshore platforms are equal contributors to the destruction of many life forms in the ocean.
The oil spill in Santa Barbara in the 60's is a good example of habitat destruction, so is the oil spill in Washington State in December of 1988, which wiped out the entire coast lines of both Washington State and Oregon.
These coastal resources belong to the Tongva Nation including the oil reserves on the mainland, the islands, and the ocean,
We do not want these resources further exploited by any corporation or goverment.

Salt/Freshwater Estuaries;
These marsh areas are used as waterways for the gathering of traditional foods, and medicine plants, roots, and animals used by the Tongva Nation.
These areas were also used by countless generations of ancestors long before us.
The Tongva Nation reserves all rights to these resources, and will not be made to pay when at such an area, to site an example, the california fish and game has begun to charge a fee to enter the Newport Upper Back Bay, this is not acceptable and is in violation of Public Law 95-341 Native American Religious Freedom Law.
40,000 years of a culture inhabiting an area makes a big difference, but in less then 150 years, our resources have been almost completely destroyed.

The Channel Islands;
Our resources on all these islands also have been overutilized to the point of extinction on both the land and the surrounding waters.
The United States Navy has dumped dangerous chemical and nuclear wastes including old nuclear submarines off the island of San Clemente, not to mention using the island as a bombing and shelling range.
Our ancestors gravesites have been damaged or destroyed by these actions, and by allowing people like Andy Yatsco from one of the San Diego Naval Bases to dig up our Ancestors graves without informing our community, Mark Raab, from California State Northridge who has worked with Mr. Yatsco, and Clement Meighen from the Universitity of California, Los Angeles.
On San Nicolas Island and San Clemente Island, the Naval Department has allowed these morbid barbaric grave robbers to destroy our heritage,
This is no longer acceptable, we deplore such actions!

The Traditional Tongva have created this policy as a warning to all the listed agencies. This is not an intent to file suit, but to inform these agencies that because of such actions, catastrophic events have begun to manifest, according to our Oral Prophesies.

We will not be responsible for the loss of life, or the damages created by large earth quakes, drought, floods, high winds, or loss of food production on our homelands.
These acts will be the spirits of this land warning all people of the amount abuse placed on the land and the ocean.

The leaders of the Tongva Nation hope that the agencies listed reviews this policy, and makes a Big change for all persons living on our homeland.

Our Nation Has Spoken,

Art Alvitre, Tomeyar Speaker

Art Alvitre

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infotec
research incorporated

18 April 1989

Intertribal Council of Tongva
Att'n: Acwot, Tomeyar Speaker for the
Tongva Nation
4126 Potrero Rd.
Newbury Park, CA 91320

Re: Bolsa Chica Mesa/
Huntington Beach Mesa

Dear Acwot:

Thank you for your prompt reply to my March 13th inquiry regarding the Bolsa Chica Mesa/Huntington Beach Mesa locality. The valuable information contained in your letter, together with the Traditional Tongva Policy Regarding Aboriginal Resources, is deeply appreciated.

Your letter and policy statement, along with responses from other Indian groups and individuals, will be appended to INFOTEC's report, Inventory and Evaluation of Cultural Resources, Bolsa Chica Mesa and Huntington Beach Mesa, Orange County, California, which we expect to submit to the Los Angeles District, Corps of Engineers, on or before June 1. If you would like to have a copy of this report, please request one from Mr. Steven Schwartz, Environmental Planning Section, Corps of Engineers, P.O. Box 2711, Los Angeles, CA 90053-2325. It is my understanding that gratis copies of the report will be provided to interested parties upon request.

Thank you again for taking the time to prepare such a thoughtful reply to my earlier letter.

Very best regards.

Sincerely,

Michael J. Moratto, Ph.D.
President

sb

cc: S. Schwartz

19524 Hillsdale Drive, Sonora, CA 95370 (209) 533-2902 • 533-2934

THE JUANENO BAND OF MISSION INDIANS

Spokesman: David Belardes
Vice-Spokesman: Daniel Bracamontes
Treasurer: Adeline Williams

Secretary: Fred Estrada
Member-At-Large: Sonia Zuker
Member-At-Large: Gloria Carrillo

April 2, 1989

Infotec Research, Inc.
19524 Hillsdale Dr.
Sonora, CA 95370

ATTN: Mr. Michael J. Moratto, Ph.D.

RE: Bolsa Chica Mesa/Huntington Beach Mesa

Dear Dr. Moratto;

In response to your letter dated March 13, 1989, the Tribal Council of the Juaneno Band of Mission Indians wishes to inform you that we will do what is necessary to insure that you receive the information and documentation that you need to make sure the above named site is handled with the utmost sensitivity in regards to it's cultural and spiritual significance.

The project area lies within the territorial boundaries of the Acagchemem Nation, known today as the Juaneno Band of Mission Indians. The Acagchemem Indians have a history of oral facts and statistics. Oral histories through generations of ancestry have provided us with cultural information pertinent to this area. As such, this project has been a great concern to us for many years.

There are many letters, statements, and documents in our files pertaining to the importance of this site. There are also many other prople and groups who are concerned, as we are, with this project.

First of all, this was a large buriel ground with the major prehistoric village of Lukup nearby. In 1903, a newspaper company reported removing three wagon loads of human skeletal remains and grave goods from this site. Again, in the late 1930's, the WPA (Works Progress Administration) removed approximately 21 more buriels. The WPA, returning again, removed an estimated 10 more buriels. Naturally, in 1971, When Jeanne Munoz of Archaeological Research, Inc. in Huntington Beach, CA, did an archaeological investigation of the southwest portion of the area, found very little. However, in 1975, the Pacific Coast Archaeological Society conducted excavations at this site that produced 6 buriels TO DATE.

Many of our major village sites, just as this one was, included buriel grounds, sacred areas and ceremonial circles. The Juaneno People have been devastated to know that the remains of our ancestral Grandfathers and Grandmothers are treated like so much found junk to be, in archaeologicaly terms, "analyzed" and kept in dark, dingy basement storage areas for future "examination". It is also very difficult for us to see that this sacred site may be destroyed and no consideration taken for it's environmental, cultural, or spiritual importance and significance.

If you would like to meet with us for further discussion, please call or write me. Gloria Carrillo and I are overseeing this project as approved by the Tribal Council.

We will be sending you more information and/or documentation in the near future, and thank you for your consideration and cooperation.

Sincerely,

Sonia Zuker

Sonia Zuker
for the Tribal Council
15251 Anaconda St.
Whittier, CA 90603
(213) 693-6629

cc: Steve Schwartz - Corps of Engineers
Native American Heritage Commission
Juaneno Band files

infotec
research incorporated

9 April 1989

The Juaneño Band of Mission Indians
Att'n: Ms. Sonia Zuker
15251 Anaconda Street
Whittier, CA 90603

Re. Bolsa Chica Mesa/
Huntington Beach Mesa

Dear Ms. Zuker:

Thank you for your prompt reply to my March 13th inquiry. The valuable information contained in your letter, together with your expression of concern for burials in the study area, is deeply appreciated.

Your letter, along with letters from other Indian groups and individuals, will be appended to our report, *Inventory and Evaluation of Cultural Resources, Bolsa Chica Mesa and Huntington Beach Mesa, Orange County, California*, which we expect to submit to the Los Angeles District, Corps of Engineers, on or before June 1. If you would like to have a copy of this report, please request one from Steve Schwartz at the Corps. It is my understanding that gratis copies of the report will be provided to interested parties upon request.

Thank you again for taking the time to prepare such a thoughtful response to my earlier letter.

Sincerely,

Michael J. Moratto, Ph.D.
President

tb
cc S. Schwartz

19524 Hillsdale Drive, Sonora, CA 95370 (209) 533-2902 • 533-2934